Index to Mechanical Engineering

Volume 78, January—December, 1956

(A) denotes Abstract; (AC) Author's Closure; (BR) Book Reviews; (C) Correspondence; (D) Discussion; (Ed) Editorial

Issue	Page Numbers
January	1– 128
February	129– 210
March	211– 306
April	307– 406
May	407– 502
June	503– 602
July	603– 690
August	691– 798
September	799– 902
October	903– 998
November	999–1094
December	1095–1202

A

ABBASSI, M. M.
Mathematical analysis of bow girders of any shape (A) ... 865

ABBOT, T. A.
Developments in instrumentation by the petrochemical industry (D) ... 759

ABRASIVES. *See* GRINDING

ACCELEROMETERS
Effect of spring mass on contact-accelerometer responses (A) ... 865

ACCUMULATORS. *See* HYDRAULIC ACCUMULATORS

ACOSTA, A. J.
Effect of the volute on performance of a centrifugal-pump impeller (A) ... 959

ADAMS, DOUGLAS P.
Alignment diagrams from network charts by graphics ... 1013

ADHESION (RAIL). *See* LOCOMOTIVES

ADHESIVES
Adhesive bonding of metals ... 19

AERODYNAMICS. *See also* SUPERSONIC FLOW
High-speed problems of large airplanes ... 832
Langley Aeronautical Laboratory research on aerodynamic heating problems (A) ... 1131
On the wake energy of moving cascades (A) ... 175
PIB aeronautical scientists study flight at 10,000 mph ... 199

AGRICULTURAL ENGINEERING
Mechanization on the farm (A) ... 462

AIR. *See* GASES

AIR CONDITIONING
Accelerated trend toward an air-conditioned America (A) ... 254
Air-conditioning research project of ASHAE (A) ... 453

AIR POLLUTION
Russians claim a "first" in safe limits for smog ... 201

AIR TRANSPORT
Air freight—a blueprint for 1956 (A) ... 374
Analysis of air-freight operation (A) ... 463
Large water-based transport and its military uses (A) ... 563

AIRPLANE ENGINES
Development of the Allison turboprop engine (A) ... 746
Experiments with optimalizing controls applied to rapid control of engine pressures with high-amplitude noise signals (A) ... 658
J69 engine—two applications of a small turbojet (A) ... 1056
New solar gas-turbine-driven auxiliary power plant (A) ... 751
Research on application of cooling to gas turbines (A) ... 1058
Test facilities—aeronautical turbine laboratory ... 927

AIRPLANE HYDRAULIC SYSTEMS. *See also* HYDRAULIC FLUIDS
Comparison of hydraulic and pneumatic accessory-power generation (A) ... 563
High-temperature aircraft hydraulics (A) ... 559

AIRPLANE INSTRUMENTS. *See also* COMPUTERS
Controlled gyro tumbling by means of a high-angle gimbal stop (A) ... 564
Flight-instrument system (A) ... 447
Modernization of air-borne electronic equipment by the use of transistors (A) ... 559

AIRPLANE MANUFACTURE
Modern materials handling as employed by Boeing Airplane Company, Seattle Division (A) ... 648

AIRPLANE WINGS
Weight-efficiency analysis of thin-wing construction (A) ... 561

AIRPLANES. *See also* COOLING SYSTEMS
Aircraft structural testing techniques at elevated temperatures (A) ... 562
Application of a new structural index to compare titanium alloys with other materials in airframe structures (A) ... 560
Cartridge-actuated devices for aircraft escape systems (A) ... 942
The challenge of progress in air technology ... 696
Descriptions and prediction of human response to aircraft thermal environments (A) ... 558
Design criteria for heated aircraft structures (A) ... 561
Discussion on safety-factor requirements for supersonic aircraft structures (A) ... 562
High-flying Ti (A) ... 651
High-speed problems of large airplanes ... 832
High-temperature problems of air-borne electrical equipment (A) ... 563
"Hot lab" boon to SRI nuclear aircraft propulsion program ... 1182
Human problems in the development of the F-102 cockpit (A) ... 558
Inflatable airplane (A) ... 446
Pod-mounted gas-turbine-driven auxiliary power unit (A) ... 650
Some NACA research on the effect of transient heating on aircraft structures (A) ... 562
Some structural penalties associated with thermal flight (A) ... 560
Supersonic test vehicle (A) ... 840
Turboconditioning systems with vapor compression cycles (A) ... 1050

ALIGNMENT DIAGRAMS. *See* GRAPHICAL METHODS

ALLEN, J. J.
Properties and applications of Coral rubber—a cis-1, 4 polyisoprene ... 1098

ALLEN, R. K.
Adhesion—how much? An investigation of the causes of low wheel-to-rail adhesion and possible methods of improving it (A) ... 372

ALLIGER, G.
Properties and applications of Coral rubber—a cis-1, 4 polyisoprene ... 1098

ALLOYS. *See* HIGH-TEMPERATURE MATERIALS, NONFERROUS ALLOYS, STEAM TURBINES, STEEL ALLOYS

ALMIRALL, JUAN ANTONIO
Obituary ... 208

ALPERT, SUMNER
Application of internal liquid cooling to gas-turbine rotors (A) ... 371

ALSPACH, P. H.
Automation in metalworking (D) ... 468

ALUMINIZING. *See* METAL COATING

ALUMINUM. *See also* METAL CUTTING
Aluminum alloys for elevated-temperature applications (A) ... 560

ALVERSON, R. C.
Impact with finite acceleration time of elastic and elastic-plastic beams (A) ... 954

ALVORD, H. H.
Load-carrying capacity of spur-gear teeth hob cut from molded du Pont "Zytel" 101 (A) ... 1153

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
Engineering Section takes "Aids for environmental control" as keynote ... 1177

AMERICAN INSTITUTE OF MINING, METALLURGICAL AND PETROLEUM ENGINEERS
Joint Fuels Conference with ASME 878, 1184

AMERICAN POWER CONFERENCE
Chicago, 1956 ... 286

AMERICAN ROCKET SOCIETY
Honors Night Dinner ... 77

AMERICAN SOCIETY FOR ENGINEERING EDUCATION
Where to get sorely needed engineering manpower is focal point of ASEE meeting ... 892

AMERICAN SOCIETY OF MECHANICAL ENGINEERS
Activities, 1956: The biggest year yet ... 694
Applied Mechanics Division
National Conference ... 479, 880
Western Applied Mechanics Conference, Pasadena ... 880
Aviation Division Conference, 1956 ... 196, 288, 483
Budget policies for 1956–1957 ... 885
Codes. *See* ASME Standards Workshop, *also subject of code*
Committees
Boiler and Pressure Vessel Committee
Montreal meeting, 1956 ... 784
Policy on nuclear installations ... 109
Junior Committee looks to future ... 118
National Nominating Committee, 1956 ... 117
Nominating Committee organizes for 1957 ... 773
Regional Administrative Committee meetings ... 674
Council
Actions ... 790
Actions on 1956 National Agenda ... 1194
Activities in 1954–1955 ... 53
Executive Committee actions ... 122, 204, 299, 397, 496, 595, 1088, 1196
New members for 1956 ... 89
Finance report for 1954–1955 ... 62
Fuels Division
Joint conference with AIME ... 878, 1184
Seeks more and better papers ... 496
Future of ASME ... 4
Gas Turbine Power Division Conference, 1956 ... 292, 577
Heat Transfer Division announces First National Conference in 1957 ... 770
Instruments and Regulators Division Conference, 1956 ... 289, 490
Junior Forum ... 118, 202, 298, 396, 495, 594, 676, 789, 882, 978, 1086, 1192
Lubrication Division
ASME-ASLE Lubrication Conference will feature nuclear sessions ... 877
Announces officers ... 115
Machine Design Division Conferences, 1956 ... 198, 293, 388, 580, 671
Management Division Conferences, 1956 ... 195, 288, 384, 482, 579
Meetings. *See also* ASME Seventy-Fifth Anniversary, *also various Divisions*
ASME-ASLE Lubrication Conference, 1956 ... 1188
ASME sponsors some sessions at AWS annual meeting ... 670
Annual Meeting, 1955 ... 66
Annual Meeting, 1956 ... 874, 971
Calendar of meetings ... 111, 195, 285, 386, 482, 588, 669, 771, 879, 985, 1083, 1190
EIC 70th annual meeting in association with ASME ... 666
Fall Meeting, Denver, 1956 ... 767, 1078
IRD Conference and Show, in New York, 1956 ... 770

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (*continued*)
Nuclear Power Plants Meeting, Pittsburgh, 1956 ... 287
RAC meetings; 1956 schedule ... 196
Semi-Anual Business Meeting, 1956 ... 783
Semi-Annual Meeting, Cleveland, 1956 ... 385, 475, 774
Spring Meeting, Portland, Ore., 1956 ... 109, 194, 288, 485
West Coast Engineering Management Conference, 1957 ... 474
Members
Fellows elected ... 880, 1190
Invited by Institution of Engineers, Australia ... 494
Membership
Candidates ... 123, 208, 302, 402, 498, 598, 680, 798, 887, 988, 1090, 1188
Membership as of Dec. 31, 1955 ... 203
Metals Engineering Division joins with AWS in spring meeting ... 294, 387
News ... 104, 187, 279, 384, 472, 577, 666, 767, 874, 971, 1078, 1184
Obituaries ... 126, 208, 304, 404, 500, 600, 680, 796, 888, 988, 1092, 1200
Officers
Nominations for 1956–1957 ... 785
Nominations open for 1958 ... 1085
Oil and Gas Power Division Conference, 1956 ... 291, 491
Petroleum Division Conference, Dallas, 1956 ... 771, 1082
Publications
ASME manuals and annuals available ... 192
Availability list of
Annual Meeting papers, 1955 ... 91
Applied Mechanics Division (Urbana) Conference Papers, 1956 ... 756
Applied Mechanics Division (West Coast) Conference papers, 1956 ... 757
Aviation Conference papers, 1956 ... 483
Engineering Management Conference Papers, 1956 ... 482
Fall Meeting papers, 1956 ... 1081
Fuels Division Conference papers, 1956 ... 1187
Gas Turbine Power Conference papers, 1956 ... 578
IRD Conference papers, 1956 ... 464, 1085
Lubrication Conference papers, 1956 ... 1188
Machine Design Conference papers, 1956 ... 580
Oil and Gas Power Conference papers, 1956 ... 492
Petroleum Mechanical Engineering Conference papers, 1956 ... 1083
Semi-Annual Meeting papers, 1956 ... 755
Spring Meeting papers, 1956 ... 489
Unpublished ASME papers ... 179, 565, 964
K. W. Clendinning, managing editor, dies ... 876
K. W. Clendinning (Ed) ... 505
Drucker and Kestin named technical editors of *Journal of Applied Mechanics* ... 879
"Engineering Tables," third volume of the ASME Handbook ... 592
J. J. Jaklitsch, Jr., named acting editor of *Mechanical Engineering* ... 770
Know your ASME publications (Ed) ... 131
Harvey F. Mack—Printer (Ed) ... 605
"Manual of consulting practice for mechanical engineers" ... 1183
Mechanical Catalog, 1957 ... 985
Meeting deadline dates (Ed) ... 213
Plea for "controversial" papers (C) ... 95
"The Prof" (Ed) ... 801
Successful ASME meetings depend on papers "in hand" ... 669
Valedictory (Ed) ... 693
Sections
Chicago Section holds first annual "New Member" dinner ... 393
Milwaukee Section scholarship activity ... 393
Pittsburgh Section conference on nuclear power plants ... 386
Rocky Mountain Section host to 1956 ASME Fall Meeting in Denver ... 1078
Savannah River Section has neutrino discoverer as guest speaker ... 1189
Southern California Section sponsors Management Meeting ... 474, 673
Seventy-fifth Anniversary; Diamond Jubilee Day ... 68
Standards workshop ... 203, 299, 399, 593, 677, 783, 884, 985, 1086, 1194
Student Branches
ASME Student Member program (Ed) ... 1001
Regional Student Conference winners, 1956 ... 982
1600 student engineers turn out for regional conferences ... 982

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (*continued*)
Technical Digest of ASME papers ... 46, 170, 265, 369, 458, 558, 648, 741, 854, 952, 1046, 1148
Technology Executives Conference, 1956 ... 279
Tours planned for 1957 ... 1188
Woman's Auxiliary
Diamond Jubilee events ... 119
Educational funds report ... 978

AMMETERS. *See* INSTRUMENTS

AMMONIA. *See* CHEMICAL EQUIPMENT

AMSTEAD, B. H.
Temperature and velocity distribution in turbulent flow of mercury (A) ... 377
Transfer of heat and momentum in a turbulent stream of mercury (A) ... 178

ANALYSIS. *See* AUTOMATIC CONTROL, INFRARED

ANDERSON, CHARLES H.
Bonded fireside deposits in coal-fired boilers—a progress report on the manner of formation (A) ... 271

ANDERSON, J. A.
Evaluation, distribution, and training of creative men (A) ... 373

ANDERSON, R. A.
Weight-efficiency analysis of thin-wing construction (A) ... 561

ANDREW, J. D.
First commercial steam generator at supercritical pressure (A) ... 653

ANEROIDS. *See* DIAPHRAGMS

ANTIFRICTION BEARINGS
Load ratings for miniature ball bearings (A) ... 462

ARGON. *See* GASES

ARNOLD, J. E.
The creative engineer (A) ... 373

ASH. *See* COAL ASH AND SLAG, FLY ASH

ASSEMBLY LINES. *See* MANUFACTURING

ATHERTON, G. H.
Suspension-drying of sawdust ... 627, 1166

ATKINSON, C. P.
Electronic analog-computer solutions of nonlinear vibratory systems of two degrees of freedom (A) ... 952

ATOMIC ENERGY. *See also* NUCLEAR ENGINEERING CONGRESS, POWER, RADIATION, RADIOACTIVITY
AMF to supply German university with research reactor ... 895
ASME plans active role in Second Nuclear Engineering Congress ... 769
Atomic criticality facility (A) ... 1033
AEC Technical Information Service announces reference center ... 1071
Atomic-energy report (A) ... 353
Atomic energy report for first half of 1956 (A) ... 1034
English translation published of conference of the Academy of Sciences of the USSR on the Peaceful Uses of Atomic Energy ... 900
Forum on "Commercial and International Developments in Atomic Energy"; proceedings published ... 479
H-bomb and industry defense (A) ... 1048
Industrial research reactor (A) ... 725
International Conference on the Peaceful Uses of Atomic Energy; proceedings available ... 192
Nuclear fusion research (A) ... 352
Oak Ridge National Laboratory completes first decade of radioisotope production and distribution ... 1070
Pegram Laboratory dedicated at Columbia University ... 200
Tandem accelerator (A) ... 847

ATSUMI, A.
On the stresses in a strip under tension and containing two equal circular holes placed longitudinally (A) ... 955

AUTOMATIC CONTROL. *See also* MANUFACTURING, RAILROAD YARDS, REMOTE CONTROL, SERVOMECHANISMS, VALVES
Automatic steel-strip thickness control (A) ... 31
Automation for assembly (A) ... 741
Automation in metalworking (D) ... 468
Basic methods for nonlinear control system analysis (A) ... 659
Determination of the characteristics of multi-input and nonlinear systems from normal operating records (A) ... 658
Developments in instrumentation by the petrochemical industry ... 132
Electronic chess-playing device demonstrates electronic control of machines (A) ... 738
Electronically controlled drilling machine (A) ... 354

AUTOMATIC CONTROL (*continued*)
Electronically controlled milling machine (A) ... 368
Experiments with optimalizing controls applied to rapid control of engine pressures with high-amplitude noise signals (A) ... 658
Foundry automation and the shell-molding process (A) ... 376
Graphical method for the analysis of piecewise linear control systems with particular application to relay controls (A) ... 964
How to obtain describing functions for nonlinear feedback systems (A) ... 746
Instruments and control—key to economical performance of steam power plants (A) ... 1150
Lease automatic custody transfer (A) ... 1156
Machine-tool automation and feedback (A) ... 741
Maintenance challenge in a petrochemicals plant (A) ... 1157
Measurement and mechanization of production control scheduling (A) ... 1150
On the analysis of linear and nonlinear systems (A) ... 656
Optimum nonlinear control (A) ... 656
Physical and mathematical mechanisms of instability in nonlinear automatic control systems (A) ... 656
Process control by end-point analysis and associated data-reduction systems ... 137
Remote control and operation of booster stations on the Platte pipeline system (A) ... 1162
Résumé of the development and literature of nonlinear control-system theory (A) ... 658
Segmented transfer machine (A) ... 39
Spectral response of control system containing zero-memory nonlinearity to random inputs (A) ... 655
Supervisory data centers for mechanical equipment in buildings ... 848
Tape-controlled conveyer (A) ... 853
VDE-VDI International Conference on Automatic-Control program high lights ... 897

AUTOMATION. *See also* AUTOMATIC CONTROL, MANUFACTURING
G-E film, "This is Automation" ... 42
International Automation Exposition, Chicago, 1955 ... 115

AUTOMOBILE ENGINES
Aluminum die-cast engine blocks (A) ... 34

AUTOMOBILES. *See* ENGINES—GASOLINE, MOTOR VEHICLES

AVIATION. *See also* WIND TUNNELS
Aviation developments at a glance ... 554

B

BAER, C. J.
Study of college graduates in the 1954 edition of "Who's who in engineering" (AC) ... 378

BAILEY, E. G.
To address Combustion Control Conference in New England ... 883

BAILEY, S. B.
Bending and impact tests of cast-iron, cast-steel, and nodular-iron valve bodies (D) ... 661
Nodular iron in switchgear (D) ... 870

BAIRD, R. B.
Aircraft structural testing techniques at elevated temperatures (A) ... 562

BAIRD, R. D.
Properties of steam at high pressures—an interim steam table ... 615, 1165

BALANCING. *See* FLYWHEELS, ROTORS, VIBRATION

BALJÉ, O. E.
Drag-turbine performance (A) ... 559

BALL, HERMAN F.
Obituary ... 796

BALL, J. W.
Cavitation characteristics of gate valves and globe valves used as flow regulators under heads up to about 125 ft. (A) ... 1151

BALL BEARINGS. *See* ANTIFRICTION BEARINGS

BALLING, N. R.
Development of a centrifugal compressor for a small gas-turbine engine (A) ... 751

BANCROFT, WILFRED
Obituary ... 680

BANERIAN, G.
Some aspects of high-suction specific-speed pump inducers (A) ... 458
BANWELL, C. J.
Flow sampling and discharge measurement in geothermal bores (A) ... 377
New Zealand thermal area and its development for power production (A) .. 177
BARBIERI, CESARE
Obituary ... 796
BARGER, J. P.
Comparison of refrigerants when used in vapor compression cycles over an extended temperature range (A) ... 1051
Turboconditioning systems with vapor compression cycles (A) ... 1050
BARKER, JOSEPH WARREN
1956: The biggest year yet for ASME .. 694
President of ASME for 1956 ... 86
Urges professional survey of education (A) ... 490
What of tomorrow? ... 472
You and the engineering shortage ... 506
BARNHART, D. H.
Sintering test—an index to ash-fouling tendency (A) ... 463
BARON, S.
Combination gas-turbine and steam-turbine cycles (A) ... 369
BART, R.
Effects of boundary conditions and initial out-of-roundness on the strength of thin-walled cylinders subject to external hydrostatic pressure (A) ... 866
BARTLETT, R. L.
Predicting performance of large steam turbine-generator units for central stations (A) ... 960
BASHEN, GEORGE BERGEN
Obituary ... 1092
BASTRESS, ERNEST KARL
Obituary ... 600
BATCHELDER, HOWARD R.
Future of synthetic liquid and gaseous fuels ... 11
BATCHELDER, NELSON ALLEN
Obituary ... 600
BAUSCH, CARL L.
Receives LLD degree from Syracuse University ... 994
BAYER, LAD J.
Analysis of manufacturing costs relative to product design (A) ... 1047
BEADLE, R. H.
Combustion system for spark-fired gas engines using diesel compression ratios (A) ... 743
BEAMS
Bending and torsion of circular cylinder cantilever beams of cylindrically aeolotropic material (A) ... 175
Curved beams with eccentric boundaries (A) ... 1152
Effect of shear on the plastic bending of beams (A) ... 955
Experimental investigation of beam stresses produced by oblique impact of a steel sphere (A) ... 957
Impact with finite acceleration time of elastic and elastic-plastic beams (A) .. 954
Impulsive loadings of elastic-plastic beams (A) ... 954
Kinematic phenomena observed during the oblique impact of a sphere on a beam (A) ... 956
Method for determining the flexural effects of statically loaded beams on multiple elastic supports (A) ... 866
On the stresses and deflections of rectangular beams (A) ... 865
Plastic deformation of semi-infinite beams subject to transverse impact loading at the free end (A) ... 51
Pretwisted beams and columns (A) ... 175
BEARINGS. *See also* INSTRUMENTS, LUBRICATION, RAILROAD CARS, ROTORS
Bearings, lubricants, and lubrication—a digest of 1955 literature ... 703
Bibliography ... 711
Design study of a hydrostatic gas bearing with inherent orifice compensation (A) ... 461
Development of high-speed sleeve bearings for a solar 500-hp gas-turbine engine (A) ... 750
Experiences with aluminum bearings in heavy-duty engines and compressors (A) ... 742
Lubrication-free bearings (A) ... 729
Maximum temperature profile in journal bearings (A) ... 460
BEARINGS (*continued*)
Recent advances in miniature instrument bearing technology (A) ... 563
Sector-shaped pad (A) ... 863
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (A) ... 374
Tapered-land thrust bearing (A) ... 956
Temperature distribution in the journal bearing lubricant film (A) ... 460
BECHT, E. F.
Structural stability of modified 12-chromium alloys (A) ... 373
BECKMAN, WILLIAM F.
Young mechanical engineer in sales ... 202
BECKSTRAND, ELIAS HYRUM
Obituary ... 600
BEGEMAN, MYRON L.
Biography ... 881
Elected Fellow of ASME ... 881
BELES, FRANK JOSEPH
Obituary ... 600
BELL, K. J.
Flow through annular orifices (A) ... 653
BELTS. *See* DRIVES
BENFER, MAURICE FRINK
Obituary ... 1092
BENTON, ARTHUR SMITH
Obituary ... 500
BENTON, T. C.
Temperature distribution in the journal bearing lubricant film (A) ... 460
BENVENISTE, GUY
Solar furnace...new tool for high-temperature work ... 915
BERGER, R. S.
Investigating the strength of copper-brazed joints ... 630
BERGETHON, W. M.
Recent advances in miniature instrument bearing technology (A) ... 563
BERNARD, HAROLD BARUCH
Obituary ... 888
BESSEMER, HENRY
The Bessemer centenary (A) ... 1045
BINDER, R. C.
Practical application of uncertainty calculations to measured data (A) ... 464
BINGER, WALTER D.
Engineering in history (BR) ... 871
BISHOP, R. E. D.
Modes of vibration of a certain system having a number of equal frequencies (A) ... 953
BJORKSTEN, JOHAN A.
Plastics as mechanical engineering materials ... 337
BLACK, ARCHIBALD
Age limit for engineers? (C) ... 968
BLACK, PAUL H.
Importance of engineering science (D) .. 96
BLACKALL, F. S., JR.
The foreseeable future (BR) ... 182
Receives Howard Coonley Medal .. 1074, 1171
BLACKSHEAR, JAMES RALPH
Obituary ... 404
BLACKWOOD, D. E.
Development of high-speed sleeve bearings for a solar 500-hp gas-turbine engine (A) ... 750
BLADES, R. T.
Prevention of destructive engine failure by spectrographic analysis of crankcase oil (A) ... 1159
BLADES. *See* BLOWERS, GAS TURBINES, IMPELLERS, TURBOMACHINERY
BLAKE, F. A.
Combustion system for spark-fired gas engines using diesel compression ratios (A) ... 743
BLAND, D. R.
On the determination of a viscoelastic model for stress analysis of plastics (A) ... 957
BLOCK, KENNETH L.
How to improve profits—a challenge to engineering ... 135
BLOSSOM, FRANCIS
Obituary ... 600
BLOWERS
Slotted-blade axial-flow blower (A) 459
BLUNDELL, EUSTACE EZRA
Obituary ... 304
BOARDMAN, HARRY CLOW
Obituary ... 1092
BOATS
Gas-turbine boat (A) ... 445
BODINE, ALFRED V.
The pursuit of happiness (A) ... 461
BOGARDUS, F. J.
Curved beams with eccentric boundaries (A) ... 1152
BOILER AND PRESSURE VESSEL CODE OF ASME
Considerations affecting future pressure-vessel codes (A) ... 861
Interpretations ... 101, 185, 381, 471, 573, 763, 969, 1168
1956 edition published ... 594
Revisions and Addenda ... 102, 186, 382, 575, 764, 970, 1068, 1169
BOILER CODES
ISO TC/11 Unification of Boiler Codes holds meeting in Madrid, Spain ... 481
BOILER FURNACES
Burning fluid coke ... 921
BOILER OPERATION. *See* COAL ASH AND SLAG
BOILER PLANTS
Work of the Central Electricity Authority (Britain) on the fouling and corrosion of boiler plant (A) ... 268
BOILERS. *See also* STEAM SUPERHEATERS
Boiler cleaning—methods and controls (A) ... 1149
Bonded fireside deposits in coal-fired boilers—a progress report on the manner of formation (A) ... 271
Design of a large coal-fired steam generator for 200 F exit gas temperature and operating experience with pilot plant (A) ... 266
First commercial supercritical pressure steam generator for Philo Plant (A). 172
Headerless steam generator (A) ... 162
Pametrada research station ... (A) 44, (correction) 264
BOLEY, B. A.
On the stresses and deflections of rectangular beams (A) ... 865
BOLTED JOINTS
Liquid chemical lock nut (A) ... 941
BOLTS AND NUTS
Influence of shank area on the tensile impact strength of bolts (A) ... 461
Rolling classroom to demonstrate proper application of wire screw-thread inserts (A) ... 939
BONDING. *See* ADHESIVES
BONILLA, C. F.
Viscosity of steam, heavy-water vapor, and argon at atmospheric pressure up to high temperatures (A) ... 275
BOOK REVIEWS
Engineering in history ... 871
Engineering manual for control of in-plant environment in foundries ... 1064
The foreseeable future ... 182
Forestry handbook ... 761
A history of technology. vol. 1, from early times to fall of ancient empires (BR) ... 276
Instrument engineering. vol. 3, Part I .. 276
Plant and process ventilation ... 1064
Practical gear design ... 97
Principles of mass and flow production .. 571
Reactor shielding design manual ... 469
Solar energy research ... 379
Theory and practice of lubrication for engineers ... 1167
Turboblowers ... 183
Waterhammer analysis ... 663
BOOKS RECEIVED IN LIBRARY ... 98, 184, 277, 379, 469, 572, 663, 761, 872, 968, 1064, 1167
BORING. *See* METAL CUTTING
BORTON, GEORGE WILLS
Obituary ... 404
BOSTON, O. W.
Forces and power required to turn aluminum and seven alloys (A) ... 961
Receives Gold Medal Award of American Society of Toll Engineers ... 584
BOULGER, F. W.
Force relationships in the machining of low-carbon steels of different sulphur contents (A) ... 962
BOUNDARY LAYER. *See* FLOW OF FLUIDS
BOWEN, HARRY STEPHENSON
Obituary ... 1092
BOWERMAN, R. D.
Design of axial-flow pumps (A) ... 458
Effect of the volute on performance of a centrifugal-pump impeller (A) ... 959
BOYCE, W. E.
Effect of hub radius on the vibrations of a uniform bar (A) ... 176

BOYUM, W. B.
Internally fired, semi-closed-cycle gas-turbine plant for naval propulsion (A) 750

BRACKEN, V. P.
How radiographic inspection of lead linings can reduce future maintenance costs 245

BRADLEY, S. A., JR.
Properties and applications of silicone rubber (A) 1059

BRAID, M. D.
Production surfacing of aluminized engine valves (A) 1049

BRANDT, W. H.
Materials handling in the Soviet Union 509

BRATFISCH, A. E.
Water-hammer calculations and test results—Owens Gorge Power Plant penstocks (A) 174

BRAWNER, HERBERT J.
Obituary 210

BRAZING. *See* WELDING

BREDTHAUER, R. O.
Strength characteristics of rock samples under hydrostatic pressure (A) 1156

BREMMER, JOHN LIVINGSTON
Obituary 796

BRIDGES
Welded highway bridges (A) 846

BRIEFING THE RECORD ... 31, 156, 248, 351, 440, 541, 633, 725, 837, 937, 1031, 1131

BRIGGS, R. B.
Aqueous homogeneous reactors for producing central-station power (A) 375

BRIGHT, JAMES R.
The mechanization profile—a tool for measuring automation 620

BRILL, G. M.
65-year membership marked by ASME. 586

BRINSON, L. T., JR.
Measurement of engine response to sudden load changes (A) 743

BROADLEY, PETER R.
Flow characteristics of aerated crushed coal (A) 272

BROCKETT, G. F.
Effects of adjacent piping configurations on control-valve characteristics and capacity (A) 273

BROHL, HARRY T.
Obituary 796

BROTHMAN, A.
Design and selection of motor operated valves (A) 1155

BROUNS, R. C.
Aircraft structural testing techniques at elevated temperatures (A) 562

BROWN, E. I.
Comparison of hydraulic and pneumatic accessory-power generation (A) 563

BROWN, H. E.
Temperature and velocity distribution in turbulent flow of mercury (A) 377
Transfer of heat and momentum in a turbulent stream of mercury (A) 178

BROWN, R. J.
5000-kw dual-fuel gas turbine for industrial power (A) 1148

BROWN, W. E., JR.
Creep damage in a Cr-Mo-V steel as measured by retained stress-rupture properties (A) 376

BRUCKMANN, B. W.
Industry under enemy attack 932

BRUCKNER, R. E.
Tribute to James E. Davenport (C) 758

BRYDEN, H. L.
Comparative machinability of B 1113—C 1213—C 1120 H.R.—C 1120 C.D. & C 1119 steels (A) 962

BUCKLAND, MRS. F. F.
Transient temperature and thermal stress in locomotive gas-turbine buckets (A) 274

BUCKLING
Axisymmetrically buckling of circular cones under axial compression (A) 953
Buckling of rectangular plates uniformly compressed in two perpendicular directions with one free edge and opposite edge elastically restrained (A) 953
Buckling of simply supported plates tapered in planform (A) 175
Effect of an acoustic medium on dynamic buckling of plates (A) 175
Effect of imperfections on buckling of thin cylinders under external pressure (A) 864

BUCKLING (*continued*)
Time-dependent tangent modulus applied to column creep buckling (A) ... 866

BUDD, RALPH
Receives AICE Award of Merit 1180

BUEHLER, J. P.
Hydro power in the northwest (A) 653

BULLARD, JOHN ERVIN
Obituary 680

BULLOCK, H. LESLIE
Science changes the scientist too! (D). 759

BUMP, BURTON NELSON
Obituary 600

BUNA, T.
Combustion calculations for multiple fuels (A) 463

BURDICK, LEWIS REMINGTON
Obituary 304

BURKE, HENRY
Obituary 500

BURTON, WILLIAM HOWARD
Obituary 500

BUSCHER, JOSEPH WILLIAM
Obituary 500

BUTTERFIELD, THOMAS EDWARD
Obituary 600

BUYERS, ARCHIE STANTON
Obituary 988

BYRNE, W. H.
Biography 786
Nominated for Regional Vice-President. 786

C

CABLES. *See* ELECTRIC CABLES

CALISE, V. J.
Status of demineralizing for treatment of boiler feedwater in today's power plants (A) 266

CAMERAS
Prestressed spring motor for motion-picture camera (A) 1136

CAMETTI, B.
Hermetic motor pumps for sealed systems (AC) 96

CAMPBELL, GORDON
Receives 65-year ASME membership certificate 586

CAPLAN, LOUIS ROSENBERG
Obituary 988

CARAMEROS, A. H.
El Paso's gas-turbine operating experience (A) 749

CARBIDES. *See* METAL CUTTING

CARBON DIOXIDE. *See* GASES

CARLISS, OSWALD
Reducing power consumption in hydraulic circuits 1110

CARLSON, HAROLD C. R.
Selection and application of spring materials 331, 870

CARLSON, R. L.
Time-dependent tangent modulus applied to column creep buckling (A) .. 866

CARMICHAEL, M. B.
Combined, forced, and free-convective heat transfer in a horizontal pipe (A). 274

CARPENTER, S. R.
High-flying Ti (A) 651

CARRIER, G. F.
On the torsional oscillations of a solid sphere in a viscous fluid (A) 864

CARRIERS. *See* MATERIALS HANDLING

CARTER, JAMES I.
Problems encountered in the manufacture and rating of air heat exchangers (A) 1160

CARTER, R. H.
Load ratings for miniature ball bearings (A) 462

CARTER, W. J.
Kinematic analysis and synthesis using collineation-axis equations (A) 1152

CARTRIDGE-ACTUATED DEVICES. *See* AIRPLANES

CARTWRIGHT, K. O.
Water-hammer calculations and test results—Owens Gorge Power plant penstocks (A) 174

CASEY, WALTER EDWARD, JR.
Obituary 404

CAST IRON
Mechanical properties at elevated temperatures of ductile cast iron (A) 373
Nodular iron in switchgear ..... 327, (D) 870

CASTING. *See also* FOUNDRY PRACTICE
Investment-cast polystyrene prototypes 547

CASTINGS
143-ton hammer block (A) 1044

CASTLE, LYNN E.
When the engineer becomes a supervisor 1192

CAVITATION
Cavitation characteristics of gate valves and globe valves used as flow regulators under heads up to about 125 ft (A) 1151
Critical considerations on cavitation limits of centrifugal and axial-flow pumps (A) 458
Some aspects of high-suction specific-speed pump inducers (A) 458
Thermodynamic aspects of cavitation in centrifugal pumps (A) 174
Turbulence and boundary-layer effects on cavitation inception from gas nuclei (A) 458

CEMENT INDUSTRY
Cement manufacturing pilot plant (A) .. 844

CERAMICS. *See also* METAL COATING
Ceramics as basic engineering materials. 315

CERMETS. *See* HIGH-TEMPERATURE MATERIALS

CHAINS. *See* DRIVES

CHEMICAL EQUIPMENT
Mechanical design problems connected with ammonia synthesis (A) 1163

CHENEY, A. J.
"Zytel" nylon resin 1118

CHESTER, JOHN N.
Obituary 304

CHILTON, THOMAS H.
Elected president of Engineers Joint Council 392

CHIMNEYS
Factors influencing the dynamic behavior of tall stacks under the action of wind (A) 173

CHROMIUM
Structural stability of modified 12-chromium alloys (A) 373

CHU, HU-NAN
Influence of large amplitudes on free flexural vibrations of rectangular elastic plates (A) 865

CHUCKS. *See* MACHINE TOOLS

CHURCHILL, S. W.
Development and evaluation of an icing indicator (A) 558

CIVIL DEFENSE
H-bomb and industry defense (A) 1048

CIVILIZATION
The pursuit of happiness (A) 461

CIZMARIK, WALTER R.
Obituary 988

CLABAUGH, W. J.
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic (A) 959

CLARK, A. A.
Effects of nonlinearities in multiloop lead-angle-prediction systems (A) 656

CLARK, DONALD S.
Nominated for president of the ASM ... 994

CLARK, R. B.
Recent developments in gas-engine ignition (A) 744

CLARK, R. F.
Performance of controllable-pitch propellers in river towboat operation (A). 744

CLAUTICE, W. E.
Evaluation of the prototype unit for the ASME high-temperature steam generation investigation (A) 173

CLAYPOOLE, WALTER
Friction in a close-contact system 529

CLENDINNING, KATHERINE WALSH
Obituary 876, 905

CLOWER, JAMES I.
Importance of engineering science (D).. 96

COAL. *See* FUELS, PULVERIZED COAL

COAL ASH AND SLAG
Ash deposits on boiler surfaces from burning Central Illinois coal (A) 464
Bonded fireside deposits in coal-fired boilers—a progress report on the manner of formation (A) 271
Sintering test—an index to ash-fouling tendency (A) 463

COAL HANDLING
Coal pipeline (A) ... 1040

COCHRAN, ALEXANDER RUSSELL
Obituary ... 126

COCKEL, LOWELL C., JR.
Warning to professional engineers (D) ... 378

COKE. *See* FUELS

COLD-WORKING. *See* STEEL ALLOYS

COLE, CARTER ANDERSON
Obituary ... 888

COLUMNS
Creep stresses and deflections of columns (A) ... 52
Pretwisted beams and columns (A) ... 175
Time-dependent tangent modulus applied to column creep buckling (A) ... 866

COMBES, J. J.
Developments in instrumentation by the petrochemical industry (D) ... 758

COMBUSTION. *See also* GAS TURBINES, NOZZLES
Applications of an enthalpy-fuel/air-ratio diagram to "first law" combustion problems (A) ... 1057
Combustion calculations for multiple fuels (A) ... 462
Combustion control conference held at Norwich, Conn ... 1187
Combustion system for spark-fired gas engines using diesel compression ratios (A) ... 743
Design of a large coal-fired steam generator for 200 F exit-gas temperature and operating experience with pilot plant (A) ... 266
Pulsating, pressure-generating combustion systems for gas turbines (A) ... 272

COMPRESSORS
Calculating the size of flywheel required for a synchronous-motor-driven reciprocating compressor (A) ... 1152
Closed circuit test loop (A) ... 1135
Closed systems for testing compressors (A) ... 459
Development of a centrifugal compressor for a small gas-turbine engine (A) ... 751
Facilities and instrumentation for compressor and turbine research at the NACA Lewis Flight Propulsion Laboratory (A) ... 1059
Gas-engine compressor (A) ... 551
Problems encountered in the translation of compressor performance from one gas to another (A) ... 1057
Semi-automatic, gas-engine-driven, centrifugal, gas-compressor station (A) ... 1155
Some aspects of rotating stall in single-stage compressors (A) ... 1057
Turboblowers (BR) ... 183

COMPTON, F. A., JR.
Electrification of oil well drilling rigs—using transportation-type equipment (A) ... 1155

COMPUTERS. *See also* OFFICE MACHINES
Airborne digital computer (A) ... 164
Computers and production engineering (D) ... 1062
Electronic air-warning computer (A) ... 838
Electronic computers solving production-engineering problems ... 416
Low-cost electronic computer (A) ... 839
Mechanical computing device for the analysis of one-dimensional transient heat-conduction problems (A) ... 1053

CONGER, C. C.
Facilities and instrumentation for compressor and turbine research at the NACA Lewis Flight Propulsion Laboratory (A) ... 1059

CONNELLY, JOHN ROBERT
The engineering profession (D) ... 570

CONRAD, J. D.
Large rotor forgings for turbines and generators ... 49

CONROY, M. F.
Plastic deformation of semi-infinite beams subject to transverse impact loading at the free end (A) ... 51

CONSTRUCTION. *See* COST CONTROL

CONTROL. *See* AUTOMATIC CONTROL, REMOTE CONTROL, VALVES

CONVECTION. *See* HEAT TRANSFER

CONVEYERS. *See* MATERIALS HANDLING, PNEUMATIC DEVICES, WOOD INDUSTRIES

COOK, LILLIAN
Engineering developments of rubber—September, 1954, August, 1955 ... 341

COOK, N. H.
Influence of lead on metal-cutting forces and temperatures (A) ... 963

COOK, N. H. *(continued)*
Leaded steel and the real area of contact in metal cutting (A) ... 963

COOKE, BENNETT WELLINGTON
Obituary ... 1092

COOLING SYSTEMS
Application of internal liquid cooling to gas-turbine rotors (A) ... 371
Cooling of glass molds (A) ... 178
Liquid-metal-fuel reactor closed-cycle gas-turbine power plant ... 699
Mass-transfer cooling in a laminar boundary layer with constant fluid properties (A) ... 178
Pumping in sealed systems (D) ... 96
Research on application of cooling to gas turbines (A) ... 1058
Systematic study of air cycles for aircraft-cooling applications (A) ... 1053
Thermal problems of high-speed flight and the General Electric Company's aircraft-cooling program (A) ... 1055
Turboconditioning systems with vapor compression cycles (A) ... 1050

COOPER, W. E.
Significance of the tensile test of pressure-vessel design (A) ... 858

COPPER
Copper outlook (A) ... 843

CORDER, S. E.
Suspension-drying of sawdust ... 627, 1166

COREY, RICHARD C.
Future of synthetic liquid and gaseous fuels (D) ... 660

CORIN, PHILIP GROSVENOR
Obituary ... 500

CORLISS, GEORGE H.
Material wanted relative to the life and career of George H. Corliss ... 570

CORNET, I.
Investigating the strength of copper-brazed joints ... 630

CORNWELL, FRED E.
Reversible pump-turbine (D) ... 567

CORRIGAN, FRANK PATRICK
Obituary ... 1092

CORROSION
High-temperature corrosion of alloy exposed in the superheater of an oil-fired boiler (A) ... 269
How radiographic inspection of lead linings can reduce future maintenance costs ... 245
Metal transport in liquid-water systems and effect on heat transfer (A) ... 271
Work of the Central Electricity Authority (Britain) on the fouling and corrosion of boiler plant (A) ... 268

CORTEN, H. T.
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A (A) ... 375

COST ACCOUNTING
Relating materials-handling costs to over-all production costs ... 419
System of charging for steam in industrial plants with power generation (A) ... 375

COST ANALYSIS
Analysis of manufacturing costs relative to product design (A) ... 1047
Cost criteria of design change in industrial products (A) ... 1153
How to analyze the cost of machine tools ... 1002

COST CONTROL
Engineering for profit (D) ... 868
How to improve profits—a challenge to engineering ... 135
Program for controlling construction costs (A) ... 1162

COSTILOW, ELEANOR L.
Some aspects of rotating stall in single-stage compressors (A) ... 1057

COTTER, B. A.
Impulsive loadings of elastic-plastic beams (A) ... 954

COTTER, GEORGE LOUIS
Obituary ... 988

COUCH, V. L.
H-bomb and industry defense (A) ... 1048

CRAIG, OLLISON
Burning fluid coke ... 921
Obituary ... 681

CRAMER, ROBERT J., JR.
Rating engines by fuel-air ratio effects (A) ... 742

CRANE, HENRY MIDDLEBROOK
Obituary ... 500

CRANKSHAFTS
Rational approach to crankshaft design (A) ... 464

CRAWFORD, CHARLES W.
Biography ... 1190
Elected Fellow of ASME ... 1190

CRAWFORD, CHAUNCEY H.
Obituary ... 304

CREATIVE ENGINEERING. *See* EDUCATION, ENGINEERS

CREEP OF MATERIALS. *See also* METAL CREEP

CREVELING, J. H.
Some studies of angle relationships in metal cutting (A) ... 459

CROSSLEY, H. E.
Work of the Central Electricity Authority (Britain) on the fouling and corrosion of boiler plant (A) ... 268

CROWE, T. A.
Elected president of The Institution of Mechanical Engineers ... 585

CUNNINGHAM, D. M.
Experimental investigation of beam stresses produced by oblique impact of a steel sphere (A) ... 957
Kinematic phenomena observed during the oblique impact of a sphere on a beam (A) ... 956

CURDO, LOUIS
Controlled gyro tumbling by means of a high-angle gimbal stop (A) ... 564

CURTIS, ALLEN J.
Receives Thomas A. Middlebrooks Award ... 1074

CUTTING. *See* WELDING AND CUTTING

CYCLONES. *See* FURNACES

CYLINDERS. *See also* SHELLS
Effect of boundary conditions and initial out-of-roundness on the strength of thin-walled cylinders subject to external hydrostatic pressure (A) ... 866
Three-dimensional and shell-theory analysis of axially symmetric motions of cylinders (A) ... 863

D

DAILY, J. W.
Turbulence and boundary-layer effects on cavitation inception from gas nuclei (A) ... 458

DAMON, RALPH SHEPARD
Obituary ... 404
Receives posthumous award as American honorary fellow for 1955 from IAS ... 392

DAMPERS. *See* VIBRATION

DANNETTEL, RAYMOND C.
Biography
Elected Fellow of ASME ... 1190

DARMARA, F. N.
Vacuum-melting nickel-base alloys on a production scale ... 323, 760

DATA PROCESSING. *See* OFFICE MACHINES

DATSKO, S. C.
Metal transport in liquid-water systems and effect on heat transfer (A) ... 271

DAUBER, C. A.
Avon No. 8—a supercritical-pressure plant (A) ... 959

DAVENPORT, JAMES EGGLESTON
Obituary ... 500
Tribute to James E. Davenport (C) ... 758

DAVIDSON, JOHN H.
Some major findings of the Hoover Commission (D) ... 660

DAVIES, C. E.
Honorary member of EIC ... 584, 668

DAVIS, JESS H.
American leadership in engineering (A) ... 291

DAVIS, P. D., JR.
Modernization of air-borne electronic equipment by the use of transistors (A) ... 559

DEAN, A. G.
Practical considerations in designing railway passenger cars ... 410

DEAN, E. O.
Unit loads for bulk materials ... 15

DEAN, L. E.
Study of heat transfer to liquid nitrogen (A) ... 1049

DEAN, ROBERT C., JR.
Role for student professional and honorary societies in engineering education ... 154

DE CARLO, CHARLES R.
Electronic computers solving production-engineering problems ... 416

DE CORIOLIS, ERNEST G.
Receives Trink Industrial Heating Award 993

DE CORSO, S. M.
Effect of ambient and fuel pressure on nozzle spray angle (A)..... 747

DEEM, H. W.
Apparatus for measuring the thermal conductivity of liquids at elevated temperatures: thermal conductivity of fused NaOH to 600 C (A)..... 1056

DEFORMATION
Influence of blast characteristics on the final deformation of circular cylindrical shells (A)..... 952
Plastic deformation of semi-infinite beams subject to transverse impact loading at the free end (A)..... 51

DEIMEL, RICHARD FRANCIS
Obituary..... 126

DEISSLER, R. G.
Turbulent flow and heat transfer on a flat plate of high Mach number with variable fluid properties (A)..... 176

DE LEON, A.
Job evaluation—a system of salary determination (A)..... 1160

DEMIRJIAN, S. G.
Vacuum-melting nickel-base alloys on a production scale (D)..... 760

DESIGN. *See* CHEMICAL EQUIPMENT, INDUSTRIAL DESIGN

DEWITT, S. H.
Internally fired, semi-closed-cycle gas-turbine plant for naval propulsion (A) 750

DEXTER, GREGORY M.
Choosing a college (C)..... 967
Plea for "controversial" papers (C)..... 96

DEXTER, R. G.
Automation for assembly (A)..... 741

DIAMONDS
Smithsonian Institution gets cluster of man-made diamonds..... 898

DIAPHRAGMS
Bibliography on diaphragms and aneroids (A)..... 374
Corrugated metal diaphragm performance (A)..... 373
Design of corrugated diaphragms (A)... 374
Investigation of the properties of corrugated diaphragms (A)..... 374
Recent research on flat diaphragms and circular plates with particular reference to instrument applications (A).. 373

DICKEY, P. S.
Instruments and control—key to economical performance of steam power plants (A)..... 1150

DICKIE, H. FORD
Measurement and mechanization of production control scheduling (A)..... 1150

DIEHL, ERLE K.
Bonded fireside deposits in coal-fired boilers—a progress report on the manner of formation (A)..... 271

DIESEL ENGINES. *See also* ENGINE CYLINDERS
Application of diesel-electric traction power to oil well drilling (A)..... 1158
The "Deltic" engine; new British type (A)..... 168
Diesel engine's progress and future (A).. 461
Industrial diesel-power units (D)..... 566

DIMAGGIO, F. L.
Effect of an acoustic medium on dynamic buckling of plates (A)..... 175

DI PRIME, R. C.
On the torsional oscillations of a solid sphere in a viscous fluid (A)..... 864

DIRKS, HENRY BERNHARD
Obituary..... 210

DISKS
Thermal stresses in infinite elastic disks (A)..... 954

DI TARANTO, R. A.
Method for determining the flexural effects of statically loaded beams on multiple elastic supports (A)..... 866

DIX, E. H., JR.
Aluminum alloys for elevated-temperature applications (A)..... 560

DOAN, GILBERT E.
Science changes the scientist too!..... 231

DOLAN, T. J.
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A (A)..... 375
Significance of fatigue data in design of pressure vessels (A)..... 857

DOLL, H. G.
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism (A)..... 655

DONAHUE, J. E.
Butt welding austenitic stainless steel to ferritic steel in cylindrical shapes (A) 859

DONALDSON, R. M.
Hydraulic-turbine runner vibration (A). 459

DONNELL, L. H.
Effect of imperfections on buckling of thin cylinders under external pressure (A)..... 864

DORER, OSCAR HENRY
Obituary..... 1200

DOUDA, HAROLD CHARLES
Obituary..... 888

DOUGHTY, D. L.
Free-convection heat transfer from a horizontal right circular cylinder to Freon 12 near the critical state (A).. 274

DOW, HERBERT WILLIAM
Obituary..... 210

DRAFTING EQUIPMENT
Drawing table with extra storage space (A)..... 550

DRAGLINES. *See* MATERIALS HANDLING

DRAKE, DELSON D.
Application of internal liquid cooling to gas-turbine rotors (A)..... 371

DRAKE, R. M., JR.
Free-convection heat transfer from a horizontal right circular cylinder to Freon 12 near the critical state (A).. 274

DREDGES
Hydraulic pipeline dredge (A)..... 343
Suction dredger with remote control (A) 740

DRESSLER, R. F.
Investigation of the properties of corrugated diaphragms (A)..... 374

DREYER, WALTER
Integration of steam and hydro power in northern California (A)..... 653

DRILLING. *See* AUTOMATIC CONTROL

DRILLS
Some experiments on the influence of various factors on drill performance (A)..... 1048

DRIVES. *See also* HYDRAULIC DRIVES
Geometry of belt and chain drives (A).. 1153

DROPKIN, D.
Heat transfer rates to cross flowing mercury in a staggered tube back (A). 1056

DRUCKER, D. C.
Effect of shear on the plastic bending of beams (A)..... 955
Named technical editor of *Journal of Applied Mechanics*..... 879

DRYING
Application of superheated-vapor atmospheres to drying..... 423
Drying sawdust (D)..... 1166
Suspension-drying of sawdust..... 627

DUBERG, J. E.
Some NACA research on the effect of transient heating on aircraft structures (A)..... 562

DUCKER, W. L.
Mechanical engineering progress in the petroleum industry (D)..... 467

DUNCAN, WILLIAM YEATS
Obituary..... 500

DUNHAM, BYRON WILLIAM
Obituary..... 1092

DUNN, M. B.
Stiffness of curved circular tubes with internal pressure (A)..... 176

DURAN, P. J.
Ultrasonic impact grinding (A)..... 1154

DURAND, WILLIAM F.
Celebrates his ninety-seventh birthday. 391
Receives Naval Academy diploma..... 1073

DURDEN, J. C.
Curved beams with eccentric boundaries (A)..... 1152

DUSINBERRE, G. M.
Fin efficiency..... 570

DUST SEPARATORS
Boundary layer inside a conical surface due to swirl (A)..... 863

DUWEZ, POL
Utilization of solar furnaces in high-temperature research (A)..... 562

DWYER, O. E.
Heat transfer rates to cross flowing mercury in a staggered tube bank (A).... 1056

DYER, WILLIAM E. S.
Obituary..... 404

DYNAMICS. *See* PNEUMATIC DEVICES

DYNAMOMETERS
Inertia dynamometer (A)..... 1134

E

EBERLE, F.
Experimental superheater for steam at 2000 psi and 1250 F—report after 14,281 hours of operation (A)..... 173

ECKERT, E. R. G.
Engineering relations for heat transfer and friction in high-velocity laminar and tubulent boundary-layer flow over surfaces with constant pressure and temperature (A)..... 274
Mass-transfer cooling in a laminar boundary layer with constant fluid properties (A)..... 178

ECKMAN, D. P.
Electrohydraulic servomechanisms with an ultrahigh frequency response (A).. 657

EDDY, T. J.
Materials-handling analysis—Southern plant—National Lead Company (A). 463

EDITORIALS
ASME Student Member Program..... 1001
EJC reports its activities..... 409
K. W. Clendinning..... 905
Know your ASME publications..... 131
Harvey F. Mack—printer..... 605
Meeting deadline dates..... 213
Perception and perspective needed (report to ASME members)..... 3
"The Prof"..... 801
Promises to men of promise..... 505
Radioactive strontium fallout..... 1097
Taylor—and an opportunity..... 309
Valedictory..... 693

EDUCATION. *See also* INDUSTRIAL TRAINING
ASME endorses IAESTE plan for on-the-job training..... 112
Annual survey of technical institutes for 1955–1956 (A)..... 1076
Choosing a college (C)..... 967
The creative engineer (A)..... 373
Engineering college enrollments (A)..... 637
EJC survey of demand for engineering graduates in 1956..... 990
Evaluation, distribution, and training of creative men (A)..... 373
Five-year engineering course suggested. 688
Freeman Fellowship announced..... 115
Fulbright scholarships available..... 994
Importance of engineering science (D).. 96
Manpower and education correlated in statement of Educational Policies Commission..... 1183
Motorama marks first year of GM scholarship plan..... 285
Notes and comment..... 591, 900, 994
Role for student professional and honorary societies in engineering education..... 154
Role of technological institutes in the years ahead..... 237
Shortage of engineers (D)..... 1164
The shortage re-examined; some elements of a grand strategy for augmenting our scientific and engineering-manpower resources..... 433
Teaching machine, design for modern industry (A)..... 1046
You and the engineering shortage..... 506
What of tomorrow?..... 472
Who's who in engineering (D)..... 378

EHRICH, F. F.
Some hydrodynamic aspects of valves.. 461

EISENHOWER, DWIGHT D.
Receives Honorary Membership in ASME..... 585

EISENSTADT, RAYMOND
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers (A)..... 958

EJECTORS
New test code for ejectors and boosters.. 884

ELASTICITY. *See also* IMPACT, PLASTICITY, THERMAL STRESSES
Stress solutions for an infinite plate with triangular inlay (A)..... 957

ELDRED, BYRON E.
Obituary..... 888

ELECTRIC ANALOGY
On the dynamics of pneumatic-transmission lines (A)..... 963
Representation of nonlinear functions of two input variables on analog equipment (A)..... 745

ELECTRIC ANALOGY (*continued*)
Solutions of transient heat-transfer problems by the resistance-network analog method (A) ... 174
Transient response of a nonlinear system by a bilinear approximation method (A) ... 956

ELECTRIC CABLES
England-France electric power link (A). 1147

ELECTRIC MACHINERY
Report of the investigation of two generator-rotor fractures (A) ... 48

ELECTRIC MOTORS
Induction-motor factory (A) ... 543
Motor-load reading by ammeters (A) ... 358

ELECTRICAL EQUIPMENT
Low-voltage wiring device (A) ... 256
Nodular iron in switchgear ... 327, (D) 870
Practical aspects of using diesel-electric railway equipment on drilling rigs (A. 1159

ELECTRONIC ANALOGY
Electronic analog-computer solutions of nonlinear vibratory systems of two degrees of freedom (A) ... 952

ELECTRONICS. *See* AUTOMATIC CONTROL

ELLIOTT, D. A.
Representation of nonlinear functions of two input variables on analog equipment (A) ... 745

ELMENDORF, A.
Manufacturing synthetic lumber in Germany ... 310, 868

ELSTON, CHARLES W.
First commercial supercritical pressure steam turbine generator for the Philo Plant (A) ... 171

EMBRITTLEMENT. *See* PRESSURE VESSELS

EMERY, J. C.
Air freight—a blueprint for 1956 (A) ... 374

EMMERT, H. D.
Investigation of large steam-turbine spindle failure (A) ... 46

EMPLOYMENT
Age limit for engineers? (C) ... 968
Engineer looks at management positions ... 427
EJC survey of demand for engineering graduates in 1956 ... 990
Psychological tests in an engineering department ... 912
Report on professional standards and employment conditions ... 536
Shortage of engineers (D) ... 1164
You and the engineering shortage ... 506
The young mechanical engineer in research and development ... 396

ENDLEIN, CARL
Obituary ... 988

ENERGY. *See* POWER

ENGELKING, WALTER WILLIAM
Obituary ... 404

ENGINE CYLINDERS
Heavy fuel and cylinder wear in marine diesel engines (A) ... 745

ENGINE FAILURES
Prevention of destructive engine failure by spectrographic analysis of crankcase oil (A) ... 1159

ENGINEERING. *See also* EDUCATION, TECHNOLOGY
Art of applying science (A) ... 655
Engineering for profit (D) ... 868
Engineering in history (BR) ... 871
Engineer's greatest achievement ... 239
How to improve profits—a challenge to engineering ... 135
Mechanical engineering progress in the petroleum industry (D) ... 467
Offshore drilling (D) ... 466
U. K. mechanical-engineering research (A) ... 1146

ENGINEERING CENTER
Plans for Engineering Center due early in 1957 ... 1179

ENGINEERING DEVELOPMENTS AT A GLANCE ... 364, 454, 736

ENGINEERING INSTITUTE OF CANADA
Annual Meeting, Montreal, 1956 ... 389
EIC 70th annual meeting in association with ASME ... 666

ENGINEERING PROFESSION. *See also* ENGINEERS' REGISTRATION
The engineering profession (D) ... 570
Growth pattern of the engineer ... 978
How industry can stimulate interest in technical-society work ... 686
Importance of engineering science (D) ... 96
"Manual of consulting practice for mechanical engineers" issued by ASME. 1183
Professional acceptance through public recognition ... 298

ENGINEERING PROFESSION (*continued*)
Professional aspects of the practice of engineering ... 28
Proposed survey of the engineering profession—report of the Joint Committee of the ECPD and EJC ... 1128
Promises to men of promise (Ed) ... 505
Report from Canada on professional development ... 676
Report on professional standards and employment conditions ... 536
Warning to professional engineers (D) ... 378
What is a professional man? ... 882
What of tomorrow? ... 472

ENGINEERING PUBLICATIONS
English translation of Conference of the Academy of Sciences of the USSR on Peaceful Uses of Atomic Energy ... 900
First issue of *Nuclear Science and Engineering* released in March, 1956 ... 902
For authors only (A) ... 40
Literature notes ... 1077, 1182
"Manual of consulting practice for mechanical engineers" issued by ASME. 1183
New British journal, *Nuclear Engineering*, commenced publication, April, 1956 ... 902
Proceedings of the International Conference on the Peaceful Uses of Atomic Energy available ... 192
U of ... conference to study technical-literature readability ... 581

ENGINEERING SOCIETIES
Engineering Societies Center—a summary of the facts ... 893
How industry can stimulate interest in technical-society work ... 686
Meetings of other societies ... 109, 119, 198, 280, 300, 493, 579, 588, 684, 895, 952, 1029, 1077, 1181, 1190
Plans for Engineering Center due early in 1957 ... 1179
Role for student professional and honorary societies in engineering education ... 154
VDI celebrates its 100th birthday ... 682

ENGINEERING SOCIETIES CENTER
New York City recommended by task committee on engineering center site ... 773

ENGINEERING SOCIETIES LIBRARY
Annual report ... 114
French scientific and technical book exhibit ... 482

ENGINEERING SOCIETIES PERSONNEL SERVICE, INC.
Positions available ... 24, 206, 301, 401, 497, 577, 678, 796, 886, 986, 1087, 1197

ENGINEERS. *See also* MANPOWER
Age limit for engineers? (C) ... 968
American engineers ... 789
The creative engineer (A) ... 373
Engineer looks at management positions ... 427
Engineers—top managers (A) ... 35
Evaluation, distribution, and training of creative men (A) ... 373
Monsanto meeting discusses mechanical engineers' place in chemical industry. 1071
When the engineer becomes a supervisor ... 1192
Who's who in engineering (D) ... 378
The young mechanical engineer in research and development ... 396

ENGINEERS' COUNCIL FOR PROFESSIONAL DEVELOPMENT
Annual meeting, 1956 ... 894, 1173
Detroit industry engineering-training program implements ECPD program. 493
Proposed survey of the engineering profession—Report of the Joint Committee of the ECPD and EJC ... 1128

ENGINEERS' EARNINGS
Are engineers underpaid? (A) ... 1086
What price the professional engineer? ... 515, (D) 1063

ENGINEERS JOINT COUNCIL
EJC General Assembly points to needs for improved utilization of engineering manpower ... 296
EJC reports its activities (Ed) ... 409
EJC survey of demand for engineering graduates in 1956 ... 990
Proposed survey of the engineering profession—report of the Joint Committee of the ECPD and EJC ... 1128
Report on professional standards and employment conditions ... 536

ENGINEERS' REGISTRATION
Importance of registration in improving the status of engineers ... 1103
NCSBEE meeting, 1956 ... 991
NSPE position on state licensing laws (C) ... 96

ENGINES. *See also* DIESEL ENGINES
Measurement of engine response to sudden load changes (A) ... 743
Rating engines by fuel-air ratio effects (A) ... 742

ENGINES—AIR-COOLED
Air-cooled V-4 engine (A) ... 938

ENGINES—GAS
Combustion system for spark-fired gas engines using diesel compression ratios (A) ... 743
Recent developments in gas-engine ignition (A) ... 744

ENGINES—GASOLINE
Gasoline injection system (A) ... 162

ENNIS, JOSEPH B.
Obituary ... 126

EQUIPMENT REPLACEMENT
Practical equipment-replacement economics (A) ... 654

ERGIN, E. I.
Transient response of a nonlinear system by a bilinear approximation method (A) ... 956

ERICKSEN, W. S.
Bending and torsion of circular cylinder cantilever beams of cylindrically aeolotropic material (A) ... 175

ERSKINE, W. F.
Evaluation of the prototype unit for the ASME high-temperature steam generation investigation (A) ... 173

ESGAR, J. B.
Research on application of cooling to gas turbines (A) ... 1058

ESTCOURT, V. F.
Plant management and other factors affecting maintenance costs in steam generating stations (A) ... 267

EUROPEAN SURVEY—Engineering progress in the British Isles and Western Europe ... 44, 168, 262, 366, 456, 556, 646, 738, 850, 950, 1044, 1146

EVAN-IWANOWSKI, R. M.
Stress solutions for an infinite plate with triangular inlay (A) ... 957

EVANS, T. C.
Gas-turbine rotary regenerator design and development of prototype unit for 3000-hp plant (A) ... 754

EVAPORATION. *See also* DRYING
Liquid-droplet heating and evaporation in a high-temperature gas stream (A). 376

EXHAUST SYSTEMS. *See* VENTILATION

EXTRUSION. *See* POWER PRESSES, STRESSES AND STRAINS

F

FACTORY LAYOUT
Planning for safety ... 815

FADDEN, W. J., JR.
New way to simplify the steam-power plant (A) ... 961

FAILURES. *See* ENGINE FAILURES

FALLIS, J. M.
Test procedures for the evaluation of control-valve flow performance (A) .. 461

FALLOUT. *See* RADIOACTIVITY

FANS
Turboblowers (BR) ... 183

FATIGUE OF MATERIALS. *See* METAL TESTING—FATIGUE

FAX, D. H.
Generalized optimal heat-exchanger design (A) ... 1055

FEEDBACK. *See* AUTOMATIC CONTROL

FEEDWATER TREATMENT
Metal transport in liquid-water systems and effect on heat transfer (A) ... 271
Status of demineralizing for treatment of boiler feedwater in today's power plants (A) ... 266

FEELEY, F. G., JR.
Fly-ash refiring (A) ... 268

FELLOWSHIPS. *See* EDUCATION

FERGUSON, WILLIAM
Retires after 10 years as chairman of the Uniform Boiler and Pressure Vessel Laws Society ... 993

FERRITES. *See* MAGNETISM

FERRY, JOHN M.
Presented with Exceptional Civilian Service Award ... 1074

FERRY, RALPH M.
Biography ... 881
Elected Fellow of ASME ... 881

FIALA, S. N.
First commercial supercritical pressure steam-electric generating unit for Philo Plant (A) ... 170

FIBERS. *See* TEXTILES

FIDIC. *See* INTERNATIONAL FEDERATION OF CONSULTING ENGINEERS

FIELD, CROSBY
Engineer's greatest achievement ... 239

FILTERS AND FILTRATION
Cleanable micronic filter (A) ... 38
Filtration of No. 6 fuel oil to remove undesirable trace metals (A) ... 369

FINCH, JAMES KIP
A history of technology, vol. 1, from early times to fall of ancient empires (BR) ... 276

FINNIE, I.
Review of the metal-cutting analyses of the past hundred years ... 715

FINS. *See* HEAT-EXCHANGE EQUIPMENT

FIRE PREVENTION
Fail-safe monitoring systems (A) ... 450

FISHER, F. G.
Adhesion—how much? An investigation of the causes of low wheel-to-rail adhesion and possible methods of improving it (A) ... 372

FISHMAN, H. B.
Consumable-insert technique for pipe welding (D) ... 661

FLAME CUTTING. *See* WELDING AND CUTTING

FLANDERS, RALPH E.
Receives honorary fellowship in Standards Engineers Society ... 400

FLEISCHMANN, W. L.
Time-temperature effect on properties of weld heat-affected zone in type-347 stainless steel (A) ... 860

FLORSCHUTZ, F. E.
Nodular iron in switchgear ... 327, 871

FLOW OF FLUIDS. *See also* FLUID METERS, HEAT TRANSFER HYDRODYNAMICS
Analysis of incompressible, nonviscous, blade-to-blade flow in rotating blade rows (A) ... 958
Boundary layer inside a conical surface due to swirl (A) ... 863
Effect of the volute on performance of a centrifugal-pump impeller (A) ... 959
Engineering relations for heat transfer and friction in high-velocity laminar and turbulent boundary-layer flow over surfaces with constant pressure and temperature (A) ... 274
Preliminary analysis of a turning jet (A) ... 1148
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers (A) ... 958
Theory for base pressures in transonic and supersonic flow (A) ... 952
Turbulent flow and heat transfer on a flat plate of high Mach number with variable fluid properties (A) ... 176

FLUID COKE. *See* FUELS

FLUID FRICTION. *See* FLOW OF FLUIDS

FLUID METERS
Experience with positive displacement meters in oil pipe service (A) ... 1157
Flow through annular orifices (A) ... 653
Flowmeter laboratory (A) ... 843
Fluid flow through two orifices in series. III—the parameters of metastable and stable flow of hot water (A) ... 271
Mass flowmeter for in-flight refueling (A) ... 564
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead bismuth eutectic (A) ... 959
Practical pulsation threshold for flowmeters (A) ... 374

FLY ASH
Fly-ash refiring (A) ... 268

FLYWHEELS. *See also* COMPRESSORS
Balancing machine for flywheels (A) ... 1044

FOGLEMAN, E. L.
Report of the investigation of two generator-rotor fractures (A) ... 48

FOLEY, F. B.
Mechanical properties at elevated temperatures of ductile cast iron (A) ... 373

FONTANA, MARS G.
Recipient of Speller Award ... 193

FOOD PROCESSING
Atomic food preservation (A) ... 161
Recent advances in food technology ... 802

FORESTRY
Forestry handbook (BR) ... 761

FORGING. *See* POWER PRESSES

FORGINGS
Acceptance guides for ultrasonic inspection of large rotor forgings (A) ... 50
Large rotor forgings for turbines and generators ... 49
Work of the task group on brittle failure of large steel forgings (A) ... 50

FORSTALL, W.
Momentum diffusion from a slot jet into a moving secondary (A) ... 176

FORTIER, A. L. A.
Sonic pneumatic measurements of lengths and their applications (A) ... 461

FOSTER, J. S.
Receives Certificate of Merit for 65 years' service to the Society ... 586

FOSTER-PEGG, R. W.
Tests of an experimental coal-burning turbine (A) ... 273

FOUNDRY PRACTICE
Continuous casting (A) ... 156
Continuous casting tests (A) ... 841
Engineering manual for control of in-plant environment in foundries (BR) ... 1064
Foundry automation and the shell-molding process (A) ... 376

FOWDEN, W. M. M., JR.
33,000 hr on marine gas turbines in naval service (A) ... 862

FOX, KENNETH R.
Engineering aspects of textile structures ... 517

FRANCK, C. C.
Properties of steam at high pressure (D) ... 1165

FRANZ, ERWIN E.
Obituary ... 210

FRANZEN, TORE
Spring materials (D) ... 869

FRASER, J. P.
Turbulent free-convection, heat-transfer rates in a horizontal pipe (A) ... 1154

FREDERICK, DANIEL
On some problems in bending of thick circular plates on an elastic foundation (A) ... 176

FREE PISTON. *See* GAS TURBINES, MOTOR VEHICLES

FREESE, C. E.
Mechanical design problems connected with ammonia synthesis (A) ... 1163

FREIBERGER, WALTER
Minimum-weight design of cylindrical shells (A) ... 956

FREIDAY, JAY ANTHONY
Obituary ... 798

FREIGHT CARS. *See* RAILROAD CARS

FRENCH, EDWARD P.
Measuring ramjet tailpipe temperatures (A) ... 564

FRENDBERG, A. MILTON
First commercial supercritical pressure steam generator for Philo Plant (A) ... 172

FREUDENTHAL, ALFRED M.
Awarded Swedish Aeronautical Society Medal ... 1074

FREUND, C. J.
Science changes the scientist too! (D) ... 760
What is a professional man? ... 882

FREUND, HERMAN RICHARD
Obituary ... 1200

FRICTION. *See also* FLOW OF FLUIDS, METAL FATIGUE
Difluorodichloromethane as a boundary lubricant for steel and other metals ... 233
Friction in a close-contact system ... 529

FRIED, L.
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic (A) ... 959

FRISCH, J.
Residual stresses in cold-extruded aluminum (A) ... 174

FROEHLICH, KURT F.
Rating engines by fuel-air ratio effects (A) ... 742

FROST PROTECTION
Preliminary analysis of a turning jet (A) ... 1148

FUELS. *See also* NATURAL GAS, WOOD WASTE
Anthracite-coke blends (A) ... 33
Burning fluid coke ... 921
Coke-processing plant to convert Gilsonite to coke and high-octane gasoline (A) ... 940
Combustion calculations for multiple fuels (A) ... 463

FUELS (*continued*)
Future of synthetic liquid and gaseous fuels ... 11, (D) 660
Multifuel-firing of cyclone furnaces ... 823

FULTON, S. D.
Estimating partial-load performance of large reheat turbine generator units (A) ... 1150

FURBY, N. W.
Oronite high-temperature hydraulic fluids 8200 and 8515 (A) ... 563

FURNACES. *See also* BOILER FURNACES, METALLURGICAL FURNACES, SOLAR ENERGY
Multifuel-firing of cyclone furnaces ... 823

FURRER, J. R.
History and development of the ACF Talgo (A) ... 372

G

GAITHER, ROBERT HUGUS
Obituary ... 888

GALLETLY, G. D.
Effects of boundary conditions and initial out-of-roundness on the strength of thin-walled cylinders subject to external hydrostatic pressure (A) ... 866

GALLOWAY, D. F.
Some experiments on the influence of various factors on drill performance (A) ... 1048

GARDINER, C. M.
Increased life for gas-turbine combustion systems burning residual fuel (A) ... 748

GARRETT, ERIC HANOVER
Obituary ... 500

GARVEY, T. M.
Force relationships in the machining of low-carbon steels of different sulphur contents (A) ... 96

GAS ANALYSIS
Gas-sampling system (A) ... 362

GAS CLEANERS
Apparatus for sampling particulate matter in high-pressure gas streams (A) ... 1161

GAS TURBINES. *See also* AIRPLANE ENGINES, BOAT, LOCOMOTIVES—GAS TURBINE, MOTOR VEHICLES, POWER PLANTS—GAS TURBINE
Application of internal liquid cooling to gas-turbine rotors (A) ... 371
Correlation of fir-tree-type turbine-blade fastening strength with mechanical properties of materials (A) ... 371
Design considerations for naval gas turbines (A) ... 749
Development of a centrifugal compressor for a small gas-turbine engine (A) ... 751
Development of high-speed sleeve bearings for a solar 500-hp gas-turbine engine (A) ... 750
Effect of turbine-blade cooling on efficiency of a simple gas-turbine power plant (A) ... 274
Firebird II gas-turbine passenger car (A) ... 259
Historic marine gas turbine (A) ... 738
Increased life for gas-turbine combustion systems burning residual fuel (A) ... 748
Internally fired, semi-closed-cycle gas-turbine plant for naval propulsion (A) ... 750
Nuclear gas turbines; symposium covering the applications of various gas-turbine power systems to nuclear reactors ... 606
1130-bhp gas turbine (A) ... 837
Pod-mounted gas-turbine-driven auxiliary power unit (A) ... 650
Pulsating, pressure-generating combustion systems for gas turbines (A) ... 272
Rotary regenerator for gas turbines (A) ... 862
Seal leakage in the rotary regenerator and its effect on rotary-regenerator design for gas turbines (A) ... 178
Some design aspects of the free-piston gas-generator-turbine plant
Part 1—thermodynamics and component characteristics (A) ... 371
Part 2—controls and accessories (A) ... 370
Supercharged and intercooled free-piston-and-turbine compound engine —a cycle analysis (A) ... 370
Tests of an experimental coal-burning turbine (A) ... 273
Thermodynamics of cooled turbines. Part 1—the turbine stage (A) ... 370
Part 2—the multistage turbine (A) ... 370

GAS TURBINES (*continued*)
33,000 hr on marine gas turbines in naval service (A) 862
The versatile gas turbine (A) 651

GASES
Determination of heat-transfer coefficients for air and carbon dioxide (A). 274
Viscosity of steam, heavy-water vapor, and argon at atmospheric pressure up to high temperatures (A) 275

GATES, G. H.
Polyurethane rubber as a material of construction 1016

GATES, R. M.
Re-elected to ASA board of directors 193

GATES. *See* VALVES

GATSPAR, JACQUES
Obituary 681

GATZEMEYER, J. B.
Transient temperature and thermal stress in locomotive gas-turbine buckets (A) 274

GAYLE, TOM M.
Shortage of engineers (D) 1164

GEARS
Load-carrying capacity of spur-gear teeth hob cut from molded du Pont "Zytel" 101 (A) 1153
Practical gear design (BR) 97

GEHRIG, E. J.
Pneumatic conveying as adapted to the milling industry (A) 462

GENERATORS. *See* ELECTRIC MACHINERY, ROTORS

GEOMETRY. *See* MATHEMATICS

GEORGE, H. H.
Effect of internal pressure on the flexibility and stress-intensification factors of curved pipe or welding elbows (A) 961
Performance of 6061-T6 aluminum flanged-pipe assemblies under hydrostatic pressure (A) 1159

GERARD, GEORGE
Thermostructural efficiencies of compression elements and materials (A) 561

GERMANY
AMF to supply German university with research reactor 895
The Hanover Fair (A) 739
VDE-VDI International Conference on Automatic-Control program highlights 897

GESSE, R. B.
Recognition of materials handling in its entirety for proper evaluation (A) 462

GIEDT, W. M.
Heat transfer to and temperature distribution in a metal-cutting tool (A) 459

GILBERT, W. W.
Forces and power required to turn aluminum and seven alloys (A) 961

GILBRETH, LILLIAN M.
Receives VDI medal for "outstanding research into motion problems" 683

GILL, S. S.
Three "neutral" loading tests (A) 953

GILMARTIN, R. P.
Upgrading burner performance of distillate fuel oils by hydrogen treatment (A) 272

GIRDERS. *See* STRUCTURES

GITZENDANNER, L. G.
Teaching machine design for modern industry (A) 1046

GLASGOW, ARTHUR GRAHAM
Obituary 210

GLASS
Cooling of glass molds (A) 178
Ultrathin glass paper (A) 164

GLUED-LAMINATED CONSTRUCTION. *See* WOOD CONSTRUCTION

GOLDIN, ROBERT
Design criteria for heated aircraft structures (A) 561

GOLDMAN, G. M.
Discussion on safety-factor requirements for supersonic aircraft structures (A). 562

GOLDSMITH, WERNER
Experimental investigation of beam stresses produced by oblique impact of a steel sphere (A) 957
Kinematic phenomena observed during the oblique impact of a sphere on a beam (A) 956

GOODEVE, WILLIAM GRAY
Obituary 888

GOODIER, J. N.
Propagation of a sudden rotary disturbance in an elastic plate in plane stress (A) 51

GOODMAN, T. P.
Determination of the characteristics of multi-input and nonlinear systems from normal operating records (A) 658

GORDON, C. W.
Drying sawdust (D) 1166

GORDON, S. A.
Application of a new structural index to compare titanium alloys with other materials in airframe structures (A) 560

GOVERNMENT
Engineering management in reclamation (A) 1148
Essential factors of good management 1121
Some major findings of the Hoover Commission 150, (D) 660

GRAF, JOHN CHRISTIAN
Obituary 888

GRAPHICAL METHODS
Alignment diagrams from network charts by graphics 1013
Analysis of manufacturing costs relative to product design (A) 1047
Graphical method for the analysis of piecewise linear control systems with particular application to relay controls (A) 964
How to analyze the cost of machine tools 1002

GRAPHITE
National Carbon laboratory scientists discover how to "weld" graphite (A). 1132

GRASSI, R. C.
Investigating the strength of copper-brazed joints 630

GRAVES, G. L., JR.
Design considerations for naval gas turbines (A) 749

GRAY, T. C.
Pullman-Standard's Train X (A) 373

GREELEY, SAMUEL A.
Criteria for municipal incinerators—the designer's view 1024

GREEN, T. R.
Spring materials (D) 869

GREENBERG, MORRIS
Obituary 1092

GREGG, J. L.
Laminar free-convection heat transfer from the outer surface of a vertical circular cylinder (A) 177

GREY, RALPH E.
Application of internal liquid cooling to gas-turbine rotors (A) 371

GRINDING
Influence of grinding fluids upon residual stresses in hardened steel (A) 459
Metal finishing with coated abrasive grinders (A) 1142
Ultrasonic impact grinding (A) 1154

GRINNELL, S. K.
Design study of a hydrostatic gas bearing with inherent orifice compensation (A) 461

GROGAN, E. C.
On the dynamics of pneumatic-transmission lines (A) 963

GROSH, R. J.
Experimental study of the temperature distribution in plates during arc welding (A) 177

GRUBIN, CARL
On the theory of the acceleration damper (A) 865

GUIDED MISSILES
"Sidewinder" missile for air-to-air use (A) 1137

GUNTHER, D. W.
Large rotor forgings for turbines and generators (A) 49

GUY, HENRY LEWIS
Obituary 1092

H

H-BOMB. *See* ATOMIC ENERGY

HADLEY, WILLIAM A.
Why is U. S. industry strong? 820

HADNOT, LUKE RICHMOND, SR.
Obituary 988

HAGEL, W. C.
Structural stability of modified 12-chromium alloys (A) 373

HAGG, A. C.
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (A) 176

HALBERG, M. N.
Calculating the size of flywheel required for a synchronous-motor-driven reciprocating compressor (A) 115

HALL, K. W.
Load-carrying capacity of spur-gear teeth hob cut from molded du Pont "Zytel" 101 (A) 1153

HALLENBECK, GEORGE ELLIOTT
Obituary 1092

HALLMAN, T. M.
Combined, forced, and free-laminar heat transfer in vertical tubes with uniform internal heat generation (A) 178

HAMMOND, W. E.
Gas-turbine rotary regenerator design and development of prototype unit for 3000-hp plant (A) 754

HAN, L. S.
Investigation of convection heat transfer in a porous medium (A) 376

HANLON, R. H.
Bending and impact tests of cast-iron, cast-steel, and nodular-iron valve bodies 23, 662

HANSEN, OLUF BERNHARD HAGERUP
Obituary 1092

HARDIN, GORDON DABNEY
Obituary 304

HARDY, NORMAN GLADDING
Obituary 888

HARINGX, J. A.
Design of corrugated diaphragms (A) 374

HARPER, D. B.
Seal leakage in the rotary regenerator and its effect on rotary-regenerator design for gas turbines (A) 178

HARTMANN, M. J.
Problems encountered in the translation of compressor performance from one gas to another (A) 1057

HARTNER, H. E.
Force relationships in the machining of low-carbon steels of different sulphur contents (A) 962

HARTNETT, J. P.
Mass-transfer cooling in a laminar boundary layer with constant fluid properties (A) 178
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic (A) 959

HARTZ, NELSON W.
Infrared analysis in the air-pollution and industrial process control 1028

HASTINGS, RAYMOND GEORGE
Obituary 888

HATSOPOULOS, G. N.
Novel method of obtaining an isothermal surface for steady-state and transient conditions (A) 1051

HATTON, R. E.
Technical appraisal of the performance of OS-45 and/or OS-45-1 high-temperature hydraulic fluids (A) 564

HAUGHTON, CLIFFORD B., JR.
The Hoover Commission article (C) 967

HAUSNER, H. H.
Powder metallurgy—its role in the design of nuclear-power reactors (AC) 182

HAVEKOTTE, W. L.
Cermets (D) 966

HAWKINS, GEORGE A.
Biography 881
Elected Fellow of ASME 881
Experimental study of the temperature distribution in plates during arc welding (A) 177
Mechanical computing device for the analysis of one-dimensional transient heat-conduction problems (A) 1053

HAWKS, ARTHUR S.
Biography 1190
Elected Fellow of ASME 1190

HAWTHORNE, W. R.
Thermodynamics of cooled turbines
Part 1—the turbine stage (A) 370
Part 2—the multistage turbine (A) 370

HAYES, E. J.
Viscous damper design refinements for servo-mechanisms (A) 106

HEAD, A. K.
Propagation of fatigue cracks (A) 955

HEAD, V. P.
Practical pulsation threshold for flowmeters (A) 374

HEALD, HENRY T.
Receives honorary degree of Doctor of Civil Law from NYU 1074

HEAT-EXCHANGE EQUIPMENT
Air-cooled electronic chassis (A) 177
Fin efficiency 570
Generalized optimal heat-exchanger design (A) 1055
Mean temperature difference in one, two, and three-pass crossflow heat-exchangers (A) 460
Problems encountered in the manufacture and rating of air heat exchangers (A) 1160
Selection of optimum configurations for a heat exchanger with one dominating film resistance (A) 653

HEAT PUMPS
Air heat pump (A) 548

HEAT TRANSFER. *See also* BEARINGS, COOLING SYSTEMS, HEAT-EXCHANGE EQUIPMENT
Apparatus for measuring the thermal conductivity of liquids at elevated temperatures: thermal conductivity of fused NaOH to 600 C (A) 1056
Combined, forced, and free-convective heat transfer in a horizontal pipe (A) 274
Combined, forced, and free-laminar heat transfer in vertical tubes with uniform internal heat generation (A) 178
Convection phenomena in fluids heated from below (A) 178
Determination of heat-transfer coefficients for air and carbon dioxide (A) 274
Determination of thermal conductivities of metals by measuring transient temperatures in semi-infinite solids (A) 1154
Engineering relations for heat transfer and friction in high-velocity laminar and turbulent boundary-layer flow over surfaces with constant pressure and temperature (A) 274
Experimental study of the temperature distribution in plates during arc welding (A) 177
Free-convection heat transfer from a horizontal right circular cylinder to Freon 12 near the critical state (A) 274
Graphical methods for the temperature response of bodies in a varying temperature medium (A) 177
Heat-transfer rates to cross-flowing mercury in a staggered tube bank (A) 1056
Heat transfer to and temperature distribution in a metal-cutting tool (A) 459
Influence of through-metal on heat transfer through aircraft-structural-sandwich panels (A) 1052
Investigation of convection heat transfer in a porous medium (A) 376
Laminar free-convection heat transfer from the outer surface of a vertical circular cylinder (A) 177
Liquid-droplet heating and evaporation in a high-temperature gas stream (A) 376
Mass-transfer cooling in a laminar boundary layer with constant fluid properties (A) 178
Mechanical computing device for the analysis of one-dimensional transient heat-conduction problems (A) 1053
Metal transport in liquid-water systems and effect on heat transfer (A) 271
Novel method of obtaining an isothermal surface for steady-state and transient conditions (A) 1051
Solution of transient heat-transfer problems by the resistance-network analog method (A) 174
Study of heat transfer to liquid nitrogen (A) 1049
Temperature and velocity distribution in turbulent flow of mercury (A) 377
Tests of free convection in a partially enclosed space between two heated vertical plates (A) 1051
Transfer of heat and momentum in a turbulent stream of mercury (A) 178
Turbulent flow and heat transfer on a flat plate of high Mach number with variable fluid properties (A) 176
Turbulent free-convection, heat-transfer rates in a horizontal pipe (A) 1154

HEAT TRANSFER AND FLUID MECHANICS INSTITUTE
To be held at Stanford University, 1956. 582

HEAT TREATMENT
Time-temperature effect on properties of weld heat-affected zone in type-347 stainless steel (A) 860

HEFNER, B. H.
Application of diesel-electric traction power to oil well drilling (A) 1158

HEGETSCHWEILER, H.
Predicting performance of large steam turbine-generator units for central stations (A) 960

HEINRICH, HERBERT W.
Elected chairman of the Uniform Boiler and Pressure Vessel Laws Society 994

HELVERSEN, F. D.
Outstanding materials-handling practices in the pulp and paper industry on the west coast (A) 649

HEMEON, J. R.
Hydraulic accumulator applications (A) 957

HENDERSON, HERBERT
Obituary 989

HENNIG, F. O.
Gas turbine for mobile power unit (A) .. 752

HERR, WILLIAM ADAM
Obituary 1092

HERRICK, GERARD POST
Obituary 126

HERRMANN, G.
Influence of large amplitudes on free flexural vibrations of rectangular elastic plates (A) 865
Three-dimensional and shell-theory analysis of axially symmetric motions of cylinders (A) 863

HERTZ, DAVID B.
Managerial control (D) 180

HETENYI, M.
Method for calculating stress-concentration factors (A) 374

HICKEL, R. O.
Research on application of cooling to gas turbines (A) 1058

HIESTER, NEVIN K.
Solar furnace . . . new tool for high-temperature work 915

HIGBEE, LESTER C.
Re-elected president of American Congress on Surveying and Mapping .. 585

HIGGINS, T. J.
Résumé of the development and literature of nonlinear control-system theory (A) 658

HIGH-FREQUENCY HEATING
How RF concerns the wood industry (A) 652

HIGH-TEMPERATURE MATERIALS
Ceramics as basic engineering materials 315
Cermets . . . for high-temperature service ..... 319, (D) 966
Evaluation of the prototype unit for the ASME high-temperature steam generation investigation (A) 173
High-temperature alloys (A) 733

HIGH-TEMPERATURE RESEARCH. *See also* AIRPLANES, HYDRAULIC FLUIDS, SOLAR ENERGY
High-temperature symposium 588

HILL, A. M.
Maintenance welding high-test line pipe (A) 1159

HILL, VERNON R.
Report from Portland on Junior Management-Education session 495

HIRSCHHORN, H. J.
Who's who in engineering (D) 378

HISTORY
The Bessemer Centenary (A) 1045
Early document linked with present technology 589
Electric-power generation . . . past, present, and future 521
Engineering in history (BR) 871
A history of technology, vol. I, from early times to fall of ancient empires (BR) 276
Material wanted relative to the life and career of George H. Corliss 570
Perkin's Centennial to be celebrated ... 897
Review of the metal-cutting analyses of the past hundred years 715
U. S. National Museum to enlarge Hall of Tools exhibit 1070

HITCHCOCK, JOHN H.
Biography 1191
Elected Fellow of ASME 1191

HOBBS, FRANKLIN WARREN
Obituary 304

HOCKEMA, FRANK C.
Obituary 500

HODGE, P. G., JR.
Influence of blast characteristics on the final deformation of circular cylindrical shells (A) 952

HOE, R. J.
Heat-transfer rates to cross-flowing mercury in a staggered tube bank 1056

HOFF, N. J.
Receives medal for European lecture ... 391

HOKE, J.
Experimental superheater for steam at 2000 psi and 1250 F—report after 14,281 hours of operation (A) 173

HOLBROOK, G. E.
Development of the Allison turboprop engine (A) 746

HOLDEN, O.
Mechanical design features of the St. Lawrence Power Project (A) 854

HOLLISTER, S. C.
Some major findings of the Hoover Commission 150

HOLMES, A. C.
Properties of steam at high pressure (D) 1165

HOLMS, A. G.
Correlation of fir-tree-type turbine-blade fastening strength with mechanical properties of materials (A) 371

HOLT, M.
Performance of 6061-T6 aluminum flanged-pipe assemblies under hydrostatic pressure (A) 1159

HONING
Honing machine (A) 646

HONORS AND AWARDS
AICE Award of Merit 1180
ASM Gold Medal 1074
ASM Research Medal 1075
ASME Honors and Awards 73
ASME Medal 1074
ASTE Gold Medal Award 584
Bessemer Gold Medal 993
Wallace Clark Award 391, 625
Howard Coonley Medal 1074, 1171
Egleston Medal 193, 584
Enrico Fermi Award 583
No Freeman Award for 1956 496
John Fritz Medal 1074
Gantt Gold Medal 1074
Daniel Guggenheim Medal 1074
Hadfield Medal 993
Hillebrand Award of ACS 392
Hoover Medal 1074
Ernest E. Howard Award (ASCE) 1074
Henry Marion Howe Medal 1075
Kemp Medal 584
Kettering Award 1069
Lamme Gold Medal 584
Louis E. Levy Medal 1074
J. F. Lincoln Arc Welding Foundation Awards 1180
J. F. Lincoln Gold Medal 1180
Adolph Lomb Medal 583
Edward Longstreth Medal 392, 1074
Curtis H. McGraw Research Award announced by ASEE 1181
Marston Medal 1074
Thomas A. Middlebrooks Award 1074
Samuel Wylie Miller Memorial Medal. 1180
Erskine Ramsay Gold Medal 193
Albert Sauveur Achievement Award ... 1074
Society of Women Engineers Award ... 993
Speller Award 193
Spirit of St. Louis Junior Award 789
Washington Award 584
Arthur L. Williston Medal to be awarded for the first time this year by ASME 295

HOOPER, F. C.
Solar energy research (BR) 379

HOOPER, LESLIE J.
Reversible pump-turbine (D) 567

HOPPMANN, W. H., 2ND
Study of orthogonally stiffened plates (A) 954

HORNBERGER, W. N.
Portable 5000-kw railway and skid-mounted gas-turbine power plants (A) 650

HORNÉ, W. A.
Upgrading burner performance of distillate fuel oils by hydrogen treatment (A) 272

HOWELL, J. D.
Geometry of belt and chain drives (A) .. 1153

HOWLAND, WARREN E.
Mechanical computing device for the analysis of one-dimensional transient heat-conduction problems (A) 1053

HSU, S. T.
Determination of thermal conductivities of metals by measuring transient temperatures in semi-infinite solids (A) 1154

HU, L. W.
Studies on plastic flow of anisotropic metals (A) 175

HUCKERT, JESSE
Principles of mass and flow production (BR) 571

HUFFINGTON, N. J., JR.
Study of orthogonally stiffened plates (A) 954

HUM, JACK K. Y.
Powder metallurgy—its role in the design of nuclear-power reactors (D) 181

HUMAN ENGINEERING
Human engineering—a new approach to operational design 926
Human problems in the development of the F-102 cockpit (A) 558

HUNTING. *See* SERVOMECHANISMS

HUNTINGTON, J. S.
Vacuum-melting nickel-base alloys on a production scale 323, 760

HUPPERT, M. C.
Some aspects of rotating stall in single-stage compressors (A) 1057

HUSTON, C. L., JR.
Steel's role in nuclear engineering 329

HUTCHINSON, ARTHUR HERBERT
Obituary 989

HUTCHINSON, ELY CHAMPION
Obituary 304

HYDE, J. P.
Experiences with aluminum bearings in heavy-duty engines and compressors (A) 742

HYDRAULIC ACCUMULATORS
Hydraulic accumulator applications (A) 957

HYDRAULIC DRIVES
Development of hydraulic operation for gates and valves (A) 1151
Hydraulic drives using rich-oil power units (A) 1161
Reducing power consumption in hydraulic circuits 1110

HYDRAULIC FLUIDS
Oronite high-temperature hydraulic fluids 8200 and 8515 (A) 563
Technical appraisal of the performance of OS-45 and/or OS-45-1 high-temperature hydraulic fluids (A) 564

HYDRAULIC TURBINES
Field-testing a reversible pump-turbine. 141
Hydraulic-turbine runner vibration (A). 459
Hydraulic turbine-testing laboratory (A) 730
Kaplan turbine in Canada (A) 855
Reversible pump-turbine (D) 567

HYDRODYNAMICS. *See also* VALVES
Hydrodynamic research (A) 264
Momentum diffusion from a slot jet into a moving secondary (A) 176
Symposium on naval hydrodynamics (A) 896
Turbulence and boundary-layer effects on cavitation inception from gas nuclei (A) 458

HYDROSTATIC TESTING. *See also* ROCKS
Effects of boundary conditions and initial out-of-roundness on the strength of thin-walled cylinders subject to external hydrostatic pressure (A) 866
Performance of 6061-T6 aluminum flanged-pipe assemblies under hydrostatic pressure (A) 1159

I

ICE
Development and evaluation of an icing indicator (A) 558

IGNITION. *See* ENGINES—GAS, MAGNETOS

ILLUMINATION
Improved incandescent lamp (A) 165

IMPACT. *See also* BEAMS, KINEMATICS, STRESSES AND STRAINS
Impact with finite acceleration time of elastic and elastic-plastic beams (A). 954

IMPELLERS
Analysis of incompressible, nonviscous, blade-to-blade flow in rotating blade rows (A) 958
Effect of the volute on performance of a centrifugal-pump impeller (A) 959

INCINERATORS. *See* REFUSE DISPOSAL

INDUSTRIAL DESIGN
Cost criteria of design change in industrial products (A) 1153

INDUSTRIAL ENGINEERING
Industrial engineering—a definition and forecast 1114

INDUSTRIAL FILMS 996

INDUSTRIAL FURNACES. *See also* BRAZING, METALLURGICAL FURNACES
Flame radiation from pulverized coal (A) 263

INDUSTRIAL TRAINING
Detroit industry engineering-training program implements ECPD program. 493

INDUSTRY
The Hanover Fair (A) 739
Industry under enemy attack 932
Materials handling in the Soviet Union. 509
The pursuit of happiness (A) 461
Why is U. S. industry strong? 820

INFRARED
Evaporograph—a unique instrument for seeing in the dark (A) 443
Infrared analysis in air-pollution and industrial process control 1028

INSPECTION. *See* RADIOGRAPHIC INSPECTION, ULTRASONICS

INSTRUMENTS. *See also* AUTOMATIC CONTROL, BEARINGS, POWER PLANTS—STEAM
ASME IRD activity boosts ISA conclave 1084
Developments in instrumentation by the petrochemical industry 132
Dynamics of instrument bearing torque testing (A) 462
Evaporograph—a unique instrument for seeing in the dark (A) 443
Instrument engineering, vol. 3, Part 1 (BR) 276
Motor-load reading by ammeters (A) 358
Nonlinear phenomena (A) 655
Process control by end-point analysis and associated data-reduction systems 137
Recent research on flat diaphragms and circular plates with particular reference to instrument applications (A) 373
Robotester, for checking industrial machines and electronic equipment (A). 256
Scientific instruments showroom (A) 367

INSTRUMENTS—MEASURING
Pneumatic comparator (A) 646
Sonic pneumatic measurements of lengths and their applications (A) 461

INSTRUMENTS—PRESSURE. *See also* DIAPHRAGMS
Pulsation errors in manometer gages (A) 374

INSTRUMENTS—STEAM-CONSUMPTION
Instrumentation for steam-consumption tests on medium steam turbine-generator tests (A) 464

INSTRUMENTS—TEMPERATURE *See also* HEAT TRANSFER
High-speed guarded-hot-plate apparatus for thermal conductivity of thermal insulation (A) 177
Measuring ramjet tailpipe temperatures (A) 564

INSTRUMENTS—TURBINE-SUPERVISING
Turbine supervisory instruments (A) 270

INTERNATIONAL CONFERENCE ON FATIGUE OF METALS
Papers of London Conference to be represented at ASME Annual Meeting. 875

INTERNATIONAL CONGRESS OF APPLIED MECHANICS, BRUSSELS 1956 284

INTERNATIONAL FEDERATION OF CONSULTING ENGINEERS (FIDIC)
Organization and aims 76

INTERNATIONAL RELATIONS
ASME receives letter of appreciation from State Department for Russians' tour 197
Exchange visits established between Russian and American engineers by State Department proposal 108

IRELAND, R. LIVINGSTON
Receives Erskine Ramsay Gold Medal. 192

IRON AND STEEL MANUFACTURE
New oxygen process (A) 841
Oxygen converter (A) 33
Reconstructing a steel-melting shop (A) 457
Steel output (A) 842
U. S. steel capacity (A) 361

IRVINE, T. F.
Selection of optimum configurations for a heat exchanger with one dominating film resistance (A) 653

J

JACKLING, DANIEL COWAN
Obituary 681

JACKSON, CHARLES ARTHUR
Obituary 600

JACKSON, J. R.
Research problems in production routing and scheduling (A) 464

JACKSON, L. R.
Application of a new structural index to compare titanium alloys with other materials in airframe structures (A) 560

JACOBSON, E. W.
Biography 788
Mechanical engineering in the petroleum industry (AC) 467
Nominated for Technical Director 788

JAHSMAN, W. E.
Propagation of a sudden rotary disturbance in an elastic plate in plane stress (A) 51

JAKLITSCH, J. J., JR.
Named acting editor of *Mechanical Engineering* 770

JAMES, JOHN W.
Elected president of ASHAE 392

JASKI, FRANK E.
Field-testing a reversible pump-turbine. 141, 569

JEFFREY, J. O.
Bending and impact tests of cast-iron, cast-steel, and nodular-iron valve bodies 23, 662

JETS. *See* FLOW OF FLUIDS

JETTIES. *See* RIVER REGULATION

JOB EVALUATION
Job evaluation—a system of salary determination (A) 1160

JOHNSON, A. E. W.
Mechanization on the farm (A) 462

JOHNSON, A. PEMBERTON
Selection of technical managers (A) 964

JOHNSON, C. M.
Test procedures for the evaluation of control-valve flow performance (A) 461

JOHNSON, D. C.
Modes of vibration of a certain system having a number of equal frequencies (A) 953

JOHNSON, F. V.
Dynamics of instrument bearing torque testing (A) 462

JOHNSON, G. DUGAN
Kaplan turbine in Canada (A) 855
Reversible pump-turbine (D) 568

JOHNSON, H. M.
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels (A) 962

JOHNSON, HARLEY ALDEN
Obituary 602

JOHNSON, HAROLD ALEXANDER
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic (A) 959

JOHNSON, J. W.
Lateral tests on full-scale lumber and plywood-sheathed roof diaphragms (A) 652

JOHNSON, R. L.
Difluorodichloromethane as a boundary lubricant for steel and other metals 233

JOHNSON, R. M.
Closed systems for testing compressors (A) 459

JOHNSON, V. E., JR.
Turbulence and boundary-layer effects on cavitation inception from gas nuclei (A) 458

JOINTS. *See* WELDING

JONES, JOHN EDWARD
Obituary 500

JONES, M. H.
Creep damage in a Cr-Mo-V steel as measured by retained stress-rupture properties (A) 376

JORDAN, T. F.
Some studies of angle relationships in metal cutting (A) 459

JUN, F. G.
Pneumatic conveying as adapted to the milling industry (A) 462

JURSIK, J.
Dual-mode damper-stabilized servo (A). 657

K

KAEMPFFERT, WALDEMAR
Biography 1191

KAEMPFFERT, WALDEMAR (*continued*)
Elected Fellow of ASME 1191

KAFKA, P. G.
Stiffness of curved circular tubes with internal pressure (A) 176

KAISER, J. F.
Dual-mode damper-stabilized servo (A) 657

KALMAN, R. E.
Physical and mathematical mechanisms of instability in nonlinear automatic control systems (A) 656

KANE, T. R.
High-frequency extensional vibrations of plates (A) 51

KANKEL, A. V.
Corrugated metal diaphragm performance (A) 373

KATZ, E. L.
Determination of heat-transfer coefficients for air and carbon dioxide (A) .. 274

KAUPPINEN, T. S.
Load ratings for miniature ball bearings (A) 462

KAYE, J.
Novel method of obtaining an isothermal surface for steady-state and transient conditions (A) 1051

KEEFER, H.
Maintenance practices in a large internal-combustion power plant (A) 743

KEENAN, JOSEPH H.
Properties of steam at high pressure (D) 1165

KEENAN, WALTER M.
Obituary 1200

KELLER, CURT
Operating experience and design features of closed-cycle gas-turbine power plants (A) 753

KELLER, G. R.
High-temperature aircraft hydraulics (A) 559

KELLOGG, HARRY FRANCIS
Obituary 126

KELLS, M. C.
Powder metallurgy—its role in the design of nuclear-power reactors (AC) .. 182

KELLY, D. V.
New American Standard for Surface Roughness, Waviness, and Lay (A) .. 1061

KELLY, R. G.
Tables of functions for short cylindrical shells (A) 1152

KEMENY, G. A.
Effect of ambient and fuel pressure on nozzle spray angle (A) 747

KEMLER, EMORY NEUDECK
Obituary 304

KEMP, N. H.
On the wake energy of moving cascades (A) 175

KENNEDY, DOUGLAS PRESTON
Obituary 1092

KENNEDY, ROBERT EDWIN
Obituary 889

KENNEDY, W. J. L.
Effects of adjacent piping configurations on control-valve characteristics and capacity (A) 273

KENNISON, H. F.
Surge-wave velocity—concrete pressure pipe (A) 174

KERN, KENNETH CAMPBELL
Obituary 1200

KERR, EDWARD
Obituary 1092

KERR, S. LOGAN
Waterhammer analysis (BR) 663

KESTIN, JOSEPH
Named technical editor of *Journal of Applied Mechanics* 879

KETCHUM, V.
Glued-laminated timber construction (A) 651

KETTERING, CHARLES F.
Receives First Kettering Award 1069

KETTLEBOROUGH, C. F.
Sector-shaped pad (A) 863
Tapered-land thrust bearing (A) 956

KEUFFEL, AUGUST J.
Obituary 889

KILLIAN, JAMES R., JR.
The shortage re-examined; some elements of a grand strategy for augmenting our scientific and engineering-manpower resources 433

KIMBALL, D. E.
Instrumentation for steam-consumption tests on medium steam turbine-generator tests (A) 464

KINDERMAN, W. J.
Fluid flow through two orifices in series. III—the parameters of metastable and stable flow of hot water (A) 271

KINEMATICS
Application of complex geometry to relative velocities and accelerations in mechanisms (A) 1152
Kinematic analysis and synthesis using collineation-axis equations (A) 1152
Kinematic phenomena observed during the oblique impact of a sphere on a beam (A) 956

KING, ROY STEVENSON
Obituary 210

KINNEY, JOSEPH NEEDHAM
Obituary 681

KIRCHNER, J. P.
Improvement of distillate fuels by additive and refining techniques (A) 272

KITTREDGE, C. P.
Hydraulic transients in centrifugal-pump systems (A) 174

KLAUDITZ W.
Manufacturing synthetic lumber in Germany 310, 868

KLEIN, BERTRAM
Buckling of simply supported plates tapered in planform (A) 175

KLOTTER, KARL
How to obtain describing functions for nonlinear feedback systems (A) 746

KNAPP, CARL
Carrier method of handling as applied in the steel industry (A) 649

KNEISEL, OTTO
Procedures for evaluation of control-valve mechanical characteristics (A) .. 460

KNOHL, KARL
Obituary 126

KNOWLTON, P. H., JR.
Properties of steam at high pressure (D) 1165

KOENIG, J. H.
Ceramics as basic engineering materials. 315

KOHLER, W. H.
Development of hydraulic operation for gates and valves (A) 1151

KORST, H. H.
Theory for base pressures in transonic and supersonic flow (A) 952

KRAMER, J. J.
Analysis of incompressible, nonviscous, blade-to-blade flow in rotating blade rows (A) 958

KRAUSS, ARTHUR H.
Obituary 126

KREIDLER, DANA W.
Obituary 681

KREITH, FRANK
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers (A) 958

KRENE, MICHAEL JOANNES
Obituary 304

KRESS, R.
New solar gas-turbine-driven auxiliary power plant (A) 751
Pod-mounted gas-turbine-driven auxiliary power unit (A) 650

KROON, R. P.
Engineer looks at management positions 427

KUERTS, GEORGE JACOB
Obituary 404

KULJIAN, H. A.
New way to simplify the steam-power plant (A) 961

KUMMING, EMIL
Obituary 798

L

LACY, J. W.
Modernization of air-borne electronic equipment by the use of transistors (A) 559

LAMB, BAYNE
Modern materials handling as employed by Boeing Airplane Company, Seattle Division (A) 648

LAMB, CARL J.
Offshore drilling (D) 466

LAMOTHE, KENNETH F.
Obituary 1200

LANDERS, W. S.
Drying sawdust (D) 1166

LANDIS, F.
Graphical methods for the temperature response of bodies in a varying temperature medium (A) 177

LANE, A. M.
Application of superheated-vapor atmospheres to drying 423

LANKFORD, W. T.
Force relationships in the machining of low-carbon steels of different sulphur contents (A) 962

LARSON, W. M.
Polyurethane rubber as a material of construction 1016

LATTIN, JUDSON
Obituary 304

LATTIN, L. E.
Art of applying science (A) 655

LAUSSUCQ, HARRY PETER LAWRENCE
Obituary 128

LAYLAND, E. L.
Nodular iron in switchgear (D) 870

LEAD
Second look at radiographic inspection of lead linings during fabrication 1125

LEAD-BISMUTH
Orifice-metering coefficients and pipe friction factors for the turbulent flow of lead-bismuth eutectic (A) 959

LEAD LININGS. *See* CORROSION

LEADED STEEL. *See* METAL CUTTING

LECLAIR, T. G.
Dresden nuclear power station—preliminary design and economics (A) .. 265

LEE, E. H.
On the determination of a viscoelastic model for stress analysis of plastics (A) 957
Wave propagation in an elastic rod exhibiting internal coulomb friction, considered as a model for a ring spring (A) 954

LEE, G. H.
Bibliography on diaphragms and aneroids (A) 374

LEHR, CHARLES ELLIS
Obituary 304

LEIST, K.
Experimental arrangement for the measurement of the pressure distribution on high-speed rotating blade rows (A) 747

LEMAY, R. C.
Processes and product improvements to be anticipated with natural gas (A) .. 653

LENA, A. J.
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels (A) 962

LEONARD, A. S.
Preliminary analysis of a turning jet (A) 1148

LEQUEAR, H. A.
Certain departures from plastic ideality at small strains (A) 376

LETNER, H. R.
Influence of grinding fluids upon residual stresses in hardened steel (A) 459

LIEBMANN, G.
Solutions of transient heat-transfer problems by the resistance-network analog method (A) 174

LIGHT, F. H.
Planned turbine testing program (A) .. 270

LIN, T. C.
Study of axisymmetric vibrations of cylindrical shells as affected by rotatory inertia and transverse shear (A) 51

LIN, T. H.
Creep stresses and deflections of columns (A) 52
Effect of spring mass on contact-accelerometer responses (A) 865

LINDEMANN, FREDERICK CHARLES
Obituary 128

LINDSLEY, ALLEN MOORE
Obituary 1094

LINNARD, R. E.
Prevention of destructive engine failure by spectrographic analysis of crankcase oil (A) 1159

LIQUID METALS. *See* PUMPS

LIQUIDS
Apparatus for measuring the thermal conductivity of liquids at elevated temperatures: thermal conductivity of fused NaOH to 600 C (A)..... 1056

LITZSINGER, H. S.
Technical appraisal of the performance of OS-45 and/or OS-45-1 high-temperature hydraulic fluids (A)..... 564

LIU, T. D.
Method for calculating stress-concentration factors (A)..... 374

LIVERSIDGE, HORACE PRESTON
Obituary..... 304

LIVINGOOD, J. N. B.
Research on application of cooling to gas turbines (A)..... 1058

LLOYD, E. C.
Investigation of the properties of corrugated diaphragms (A)..... 374

LOCOMOTIVES
Adhesion—how much? An investigation of the causes of low wheel-to-rail adhesion and possible methods of improving it (A)..... 372
Progress in railway mechanical engineering, 1954–1955..... 218

LOCOMOTIVES—DIESEL
Diesel locomotive for steelworks (A)... 556
1800-hp diesel locomotive (A)..... 360

LOCOMOTIVES—GAS-TURBINE
Transient temperature and thermal stress in locomotive gas-turbine buckets (A)..... 274

LOCOMOTIVES—STEAM
Garratt locomotive for Mozambique (A) 740

LOEBECK, R. E.
Developments in instrumentation by the petrochemical industry (D)..... 758

LOEFFLER, A. L., JR.
Turbulent flow and heat transfer on a flat plate of high Mach number with variable fluid properties (A)..... 176

LOEWEN, E. G.
Influence of lead on metal-cutting forces and temperatures (A)..... 963
Leaded steel and the real area of contact in metal cutting (A)..... 963

LONDON, A. L.
Supercharged and intercooled free-piston-and-turbine compound engine—a cycle analysis (A)..... 370

LOVE, J., JR.
Influence of shank area on the tensile impact strength of bolts (A)..... 461

LOWELL, C. M.
Rational approach to crankshaft design (A)..... 464

LOWY, ROBERT
Obituary..... 1094

LUBAHN, J. D.
Certain departures from plastic ideality at small strains (A)..... 376
On the applicability of notch tensile-test dhta to strength criteria in engineering design (A)..... 375

LUBRICANTS AND LUBRICATION
Bearings, lubricants, and lubrication—a digest of 1955 literature..... 703
Bibliography..... 711
Conference on lubrication and wear to be held in London, 1957..... 484
Difluorodichloromethane as a boundary lubricant for steel and other metals... 233
Lubricating oil plant for Austria (A)... 1045
New lubrication pad for railroad car journal boxes (A)..... 729
Prevention of destructive engine failure by spectrographic analysis of crankcase oil (A)..... 1159
Temperature distribution in the journal bearing lubricant film (A)..... 460
Theory and practice of lubrication for engineers (BR)..... 1167

LUCKS, C. F.
Apparatus for measuring the thermal conductivity of liquids at elevated temperatures: thermal conductivity of fused NaOH to 600 C (A)..... 1056

LUDEKE, C. A.
Nonlinear phenomena (A)..... 655

LUDWIG, E. E.
Developments in instrumentation by the petrochemical industry.....132, 759

LÜHNING, A.
Manufacturing synthetic lumber in Germany.....310, 868

LULA, R. A.
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels (A)..... 962

LUMBER. *See* WOOD INDUSTRIES

LUNDSTROM, CARL BRYNOLF
Obituary..... 1200

LUNSFORD, G. W.
Developments in instrumentation by the petrochemical industry.....132, 759

LYNAH, JAMES
Obituary..... 989

LYONS, L. J.
High-temperature problems of air-borne electrical equipment (A)..... 563

M

MACAULAY, R. W.
Increased life for gas-turbine combustion systems burning residual fuel (A).... 748

MCBRIDE, THOMAS CANNING
Obituary..... 304

MCCAFFREE, K. M.
Economic appraisal of nuclear versus hydro-power development in the Pacific Northwest (A)..... 654

MCCALLEY, R. B., JR.
Tables of functions for short cylindrical shells (A)..... 1152

MCCARTHY, W. E.
Hydraulic power steering—effects of valve characteristics and steering-wheel inertia (A)..... 460

MCCLELLAN, L. N.
Engineering management in reclamation (A)..... 1148

MCCLURE, J. B.
Electric-power generation ... past, present, and future..... 521

MCCORMACK, WEBSTER J.
Reversible pump-turbine (D)..... 568

MCCORMICK, H. J.
Handling by dragline—the workhorse of industry (A)..... 1046

MCCOY, WILLIAM
Obituary..... 304

MCCULLOUGH, C. ROGERS
Reactor safeguards committee ..... its purpose, scope of activities in nuclear-power industry, and operating procedures..... 613

MCDOUGALL, GEORGE FERGUSON
Obituary..... 889

MCDOWELL, D. W., JR.
High-temperature corrosion of alloy exposed in the superheater of an oil-fired boiler (A)..... 269

MACFARLANE, WARREN C.
Biography..... 881
Elected Fellow of ASME..... 881

MCGARRAH, R. E.
Managerial control (D)..... 180

MACHINABILITY. *See* METAL CUTTING

MACHINE DESIGN. *See also* CRANKSHAFTS
On the applicability of notch tensile-test data to strength criteria in engineering design..... 375
Teaching machine design for modern industry (A)..... 1046

MACHINE-SHOP PRACTICE
Electronically controlled drilling machine (A)..... 354
Electronically controlled milling machine..... 368
Infinity in action (A)..... 891

MACHINE TOOLS
Automatic positioning table (A)..... 640
How to analyze the cost of machine tools..... 1002
Machine-tool automation and feedback (A)..... 741
Machine-tool outlook (A)..... 546
Standard for life tests for single-point tools of sintered carbide..... 884
Vertical automatic chuckers (A)..... 452

MACHINING. *See* METAL CUTTING

MCINTOSH, G. B., JR.
Semi-automatic, gas-engine-driven, centrifugal, gas-compressor station (A).. 1155

MACK, HARVEY F.
Obituary..... 605

MCKEE, ARTHUR GLENN
Obituary..... 500

MCKENNA, J. V.
Managerial control (AC)..... 181

MCKINLEY, D. C.
Experience with positive displacement meters in oil pipe service (A)..... 1157

MACKLIN, RALPH WALTON
Obituary..... 1200

MCLEAN, E. C.
Failure of a welded drying drum by caustic embrittlement..... 1105

MACLEHOSE, MAITLAND
Obituary..... 500

MACMILLAN, R. H.
Graphical method for the analysis of piecewise linear control systems with particular application to relay controls (A)..... 964

MCMILLEN, ALBERT KNOX
Obituary..... 889

MAGDEBURGER, EDWARD CARL
Obituary..... 210

MAGNESS, L. S.
Study of orthogonally stiffened plates (A)..... 954

MAGNETISM
Engineers study ferrites at Harvard University meeting..... 492

MAGNETOS
Recent developments in gas-engine ignition (A)..... 744

MAHAN, J. R.
Mechanical engineering progress in the petroleum industry (D)..... 467

MAIER, O. C.
Service testing of freight cars (A)..... 372

MAINTENANCE. *See also* PETROLEUM INDUSTRY, PIPE LINES, POWER PLANTS—STEAM
Maintenance factors affecting production costs (A)..... 271
Maintenance practices in a large internal-combustion power plant (A)..... 743

MALCOLM, D. G.
Industrial engineering ... a definition and forecast..... 1114

MALLERY, GUY, JR.
Large water-based transport and its military uses (A)..... 563

MALLETTE, F. S.
Engineering manual for control of in-plant environment in foundries (BR). 1064
Plant and process ventilation (BR)..... 1064

MALLICK, R. W.
Planning for safety in industrial plants. 815

MANAGEMENT. *See also* COST ANALYSIS, EQUIPMENT REPLACEMENT, INDUSTRIAL ENGINEERING
Applying linear programming to inventory planning in a seasonal market—a case study (A)..... 564
Engineer looks at management positions 427
Engineering Management Conference, St. Louis, 1956.....195, 482
Engineering management in reclamation (A)..... 1148
Essential factors of good management.. 1121
Inter-American Management Conference, Santiago, Chile, 1956..... 898
Management Engineering Conference, New York, 1956.....384, 579
Managerial control (D)..... 180
Selection of technical managers (A)..... 964
Steps toward more creative production engineering (A)..... 1049
Taylor—and an opportunity (Ed)..... 309
West Coast Engineering Management Conference, 1956..... 474
When the engineer becomes a supervisor..... 1192
Where to now?..... 625

MANIFOLDS
Design of manifold fittings for special temperature and pressure conditions (A)..... 1158

MANN, J. W.
How RF concerns the wood industry (A) 652

MANNING, FRANK SERGEANT, JR.
Obituary..... 304

MANOMETERS. *See* INSTRUMENTS—PRESSURE

MANPOWER
Calmer approach to scientific manpower situation urged..... 890
Engineering and scientific manpower (A) 449
EJC General Assembly points to needs for improved utilization of engineering manpower..... 296
Improved utilization of engineering manpower keynotes EJC General Assembly..... 112
Manpower and education correlated in statement of Educational Policies Commission..... 1183
Russian engineering and scientific manpower (A)..... 439

MANPOWER (*continued*)
The shortage re-examined; some elements of a grand strategy for augmenting our scientific and engineering-manpower resources ... 433
What ASME engineers have to say on manpower shortage ... 979
Where to get sorely needed engineering manpower is focal point of ASEE meeting ... 892

MANUFACTURING. *See also* HEAT-EXCHANGE EQUIPMENT, MACHINE TOOLS
ASME team reports on recent inspection tour of Russian manufacturing plants ... 295
Automatic assembly machine (A) ... 545
Automation for assembly (A) ... 741
Automation in practice (A) ... 557
Computers and production engineering (D) ... 1062
Electronic computers solving production-engineering problems ... 416
Exciting future in production revealed at Ford Engineering Forum ... 896
Measurement and mechanization of production control scheduling (A) ... 1150
The mechanization profile—a tool for measuring automation ... 620
Principles of mass and flow production (BR) ... 571
Research problems in production routing and scheduling (A) ... 464
Steps toward more creative production engineering (A) ... 1049

MAR, J. W.
Some structural penalties associated with thermal flight (A) ... 560

MARCO, S. M.
Investigation of convection heat transfer in a porous medium (A) ... 376

MARINE ENGINEERING. *See also* ENGINE CYLINDERS, GAS TURBINES
Balancing turbine rotors in place (A) ... 169
Historic marine gas turbine (A) ... 738

MARINE PROPELLERS
Performance of controllable-pitch propellers in river towboat operation (A). 744

MARK, M.
Air-cooled electronic chassis (A) ... 177

MARKS, CHARLES H.
Flow characteristics of aerated crushed coal (A) ... 272

MARKUSH, JOHN
Obituary ... 889

MARKWARDT, L. J.
Synthetic lumber (D) ... 868

MARTIN, G. H.
Application of complex geometry to relative velocities and accelerations in mechanisms (A) ... 1152

MARTIN, J. J.
Combined, forced, and free-convective heat transfer in a horizontal pipe (A). 274

MARTIN, R. W., JR.
Wood-refuse spreader-stoker firing of two steam generators (A) ... 652

MARTINEZ-D'MEZA, HECTOR
Obituary ... 500

MARTS, F. D.
Remote control and operation of booster stations on the Platte pipeline system (A) ... 1162

MARVIN, R. G.
Developments in instrumentation by the petrochemical industry ... 132, 759

MASUR, E. F.
On the carrying capacity of redundant structures (A) ... 867

MATERIALS HANDLING. *See also* COAL HANDLING
Carrier method of handling as applied in the steel industry (A) ... 649
European design trends in mechanical materials handling ... 906
Handling by dragline—the workhorse of industry (A) ... 1046
Handling timber with the fork-lift truck and materials carrier (A) ... 648
High-pressure pneumatic conveying in the lumber industry ... 722
Interfloor conveyer (A) ... 250
Materials-handling analysis—Southern plant—National Lead Company (A). 463
Materials handling in the Soviet Union ... 509
Modern materials handling as employed by Boeing Airplane Company, Seattle Division (A) ... 648
More movement—less investment—more profit (A) ... 462

MATERIALS HANDLING (*continued*)
Outstanding materials-handling practices in the pulp and paper industry on the west coast (A) ... 649
Pneumatic conveying as adapted to the milling industry (A) ... 462
Recognition of materials handling in its entirety for proper evaluation (A) ... 462
Reducing power consumption in hydraulic circuits ... 1110
Relating materials-handling costs to over-all production costs ... 419
Tape-controlled conveyer (A) ... 853
Unit loads for bulk materials ... 15

MATHEMATICS. *See also* ELECTRONIC ANALOGY
Application of complex geometry to relative velocities and accelerations in mechanisms (A) ... 1152
Geometry of belt and chain drives (A) ... 1153
Kinematic analysis and synthesis using collineation-axis equations (A) ... 1152
Method for determining the flexural effects of statically loaded beams on multiple elastic supports (A) ... 866
Tables of functions for short cylindrical shells (A) ... 1152
Transient response of a nonlinear system by a bilinear approximation method (A) ... 956

MATIUK, A.
Combination gas-turbine and steam-turbine cycles (A) ... 369

MAXWELL, BRYCE
Review of developments in plastics engineering, 1954–1955 ... 533

MAYERS, M. A.
Combination gas-turbine and steam-turbine cycles (A) ... 369

MAYNARD, HAROLD B.
Receives Wallace Clark Award ... 391
Where to now? ... 625

MEASUREMENTS
Practical application of uncertainty calculations to measured data (A) ... 464

MECHANISMS. *See* KINEMATICS

MEDEIROS, A. A.
Facilities and instrumentation for compressor and turbine research at the NACA Lewis Flight Propulsion Laboratory (A) ... 1059

MEHAN, R. L.
Time-temperature effect on properties of weld heat-affected zone in type-347 stainless steel (A) ... 860

MEI, A. J.
Hermetic motor pumps for sealed systems (AC) ... 96

MELANSON, ANTHONY CLEMENT
Obituary ... 1200

MELCHIOR, OSCAR GEORGE
Obituary ... 989

MELLOR, A. G.
Electric-power generation . . . past, present, and future ... 521

MERCURY
Temperature and velocity distribution in turbulent flow of mercury (A) ... 377

MERRILL, DONALD GODFREY
Obituary ... 304

METAL COATING
Aluminizing aspects of fabricated pipe and piping components (A) ... 1161
Flame ceramics (A) ... 1041
Plastic-coated steel sheet (A) ... 943
Production surfacing of aluminized engine valves (A) ... 1049

METAL CREEP
Analysis of creep in rotating disks based on the Tresca criterion and associated flow rule (A) ... 175
Creep damage in a Cr-Mo-V steel as measured by retained stress-rupture properties (A) ... 376

METAL CUTTING. *See also* GRINDING
Analysis of the orthogonal boring operation (A) ... 174
Automation in metalworking (D) ... 468
Bearings, lubricants, and lubrication—a digest of 1955 literature ... 703
Bibliography ... 720
Comparative machinability of B 1113—C 1213—C 1120 H.R.—C 1120 C.D. & C 1119 steels (A) ... 962
Force relationships in the machining of low-carbon steels of different sulphur contents (A) ... 962
Forces and power required to turn aluminum and seven alloys (A) ... 961
Heat transfer to and temperature distribution in a metal-cutting tool (A) ... 459
High-titanium carbide (A) ... 451

METAL CUTTING (*continued*)
Influence of lead on metal-cutting forces and temperatures (A) ... 963
Leaded steel (A) ... 943
Leaded steel and the real area of contact in metal cutting (A) ... 963
Review of the metal-cutting analyses of the past hundred years ... 715
Some experiments on the influence of various factors on drill performance (A) ... 1048
Some studies of angle relationships in metal cutting (A) ... 459

METAL EXTRUSION
M.I.T. students first to see impact-extrusion processes ... 1073

METAL FAILURES
Work of the task group on brittle failure of large steel forgings (A) ... 50

METAL FATIGUE
Conference papers featured during ASME Annual Meeting ... 875
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A (A) ... 375
International conference on fatigue in flight structures held at Columbia ... 394
International conference on fatigue of metals, London, Sept. 1956 ... 384, 771
Propagation of fatigue cracks (A) ... 955
Research on fatigue from studies of its relationship to "internal friction" (A) ... 842
Significance of fatigue data in design of pressure vessels (A) ... 857

METAL FINISHING. *See* GRINDING

METAL FORMING
Bearings, lubricants, and lubrication—a digest of 1955 literature ... 703
Residual stresses in cold-finished steel bars (D) ... 180

METAL ROLLING
Automatic steel-strip thickness control (A) ... 31

METAL TESTING. *See also* BOLTS AND NUTS
Bending and impact tests of cast-iron, cast-steel and nodular-iron valve bodies ... 23, (D) 661
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels (A) ... 962
Evaluation of the significance of Charpy tests for quenched and tempered steels (A) ... 856
Three "neutral" loading tests (A) ... 953

METAL TESTING—FATIGUE
Fatigue testing laboratory (A) ... 734

METAL TESTING—TENSION
On the applicability of notch tensile-test data to strength criteria in engineering design (A) ... 375
Significance of the tensile test of pressure-vessel design (A) ... 858

METALLOGRAPHY
Failure of a welded drying drum by caustic embrittlement ... 1105

METALLURGICAL FURNACES
Induction vacuum melting (A) ... 841
2200-lb vacuum-melting furnace (A) ... 158
Vacuum-melting nickel-base alloys on a production scale ... 323

METALLURGY
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels (A) ... 962
Investigating the strength of copper-brazed joints ... 630

METALS
Determination of thermal conductivities of metals by measuring transient temperatures in semi-infinite solids (A) ... 1154
Stresses in metals; results of research at the National Bureau of Standards (A). 1036

METEOROLOGY. *See* WAVE MECHANICS

MEYER, C. A.
Properties of steam at high pressures—an interim steam table ... 615, 1165

MICHAELS, ABRAHAM
Design criteria for municipal incinerators—the customer's view (A) ... 1059

MICHEL, J. R.
Ash deposits on boiler surfaces from burning Central Illinois coal (A) ... 464

MILBRADT, K. P.
On the carrying capacity of redundant structures (A) ... 867

MILES, J. C.
Rotary regenerator for gas turbines (A). 862

MILLER, FRED A.
Obituary ... 500

MILLER, H. A.
Nonlinear integral compensation of a velocity-lag servomechanism with backlash (A) ... 746

MILLING. *See also* AUTOMATIC CONTROL
Universal milling machine (A) ... 951

MILLS, DANIEL A.
Recent advances in food technology ... 802

MILLS, R. R., JR.
Generalized optimal heat-exchanger design (A) ... 1055

MINDLIN, R. D.
High-frequency extensional vibrations of plates (A) ... 51

MINER, HAROLD L.
Obituary ... 602

MINING. *See* POWER SHOVELS

MIRSKY, I.
Three-dimensional and shell-theory analysis of axially symmetric motions of cylinders (A) ... 863

MOCHEL, N. L.
Large rotor forgings for turbines and generators ... 49

MODELS
Models as a design tool ... 1019
On the determination of a viscoelastic model for stress analysis of plastics (A) ... 957

MOFFETT, D. W.
Applying linear programming to inventory planning in a seasonal market—a case study (A) ... 564

MOLDING. *See* GLASS

MOLLIER DIAGRAM. *See* THERMODYNAMICS

MONORAILS. *See* TRANSPORTATION

MOORE, FREDERICK CLOUSTON
Obituary ... 1200

MOORE, HORACE GREELEY
Obituary ... 1094

MORABITO, J. J.
Test of a once-through steam generator with a liquid metal as a heat source (A) ... 267

MORAIN, W. A.
Some design aspects of the free-piston gas-generator turbine plant
Part I—thermodynamics and component characteristics (A) ... 371
Part II—controls and accessories (A) 370

MORDELL, D. L.
Tests of an experimental coal-burning turbine (A) ... 273

MORGAN, DAVID W. R.
The future of ASME ... 4

MORGAN, D. W. R., JR.
Estimating partial load performance of large reheat turbine generator units (A) ... 1150

MORGAN, G. W.
Study of axisymmetric vibrations of cylindrical shells as affected by rotatory inertia and transverse shear (A) ... 51

MORIARTY, C. D.
Acceptance guides for ultrasonic inspection of large rotor forgings (A) ... 50

MORRIS, C. O.
Suspension-drying of sawdust ... 627, 1166

MORRIS, J. K.
Analysis of air-freight operation (A) ... 463

MORSE, K. M.
Factors in exhaust ventilation system design for the safety engineer (A) ... 1060

MOTHERWELL, GEORGE W.
Heavy presses now in production ... 214

MOTION PICTURES. *See also* INDUSTRIAL FILMS, PHOTOGRAPHY
G-E film, "This Is Automation" ... 42

MOTOR VEHICLES. *See also* ENGINES—AIR-COOLED
Design of over-hanging attachments for crawler tractors (A) ... 649
Experimental automobiles (A) 258
Free-piston auto engine (A) ... 642
Gas-turbine car (A) ... 444
General Motors Technical Center—dedicated to a "better tomorrow through research today" ... 645
Hydraulic power steering—effects of valve characteristics and steering-wheel inertia (A) ... 460
Tractor plant (A) ... 642

MOYLE, M. P.
Development and evaluation of an icing indicator (A) ... 558

MUCHNICK, SAMUEL N.
Adhesive bonding of metals ... 19

MURPHY, FRANK L.
Biography ... 881
Elected Fellow of ASME ... 881

MURPHY, J. J.
Considerations affecting future pressure-vessel codes (A) ... 861

MURPHY, MOYES JOSEPH
Obituary ... 500

MURRAY, S. F.
Difluorodichloromethane as a boundary lubricant for steel and other metals ... 233

MUSTER, D. F.
Bending of a uniformly loaded, semi-circular plate, simply supported around the curved edge and free along the diameter (A) ... 955

MUZIK, VICTOR KLIFTON
Obituary ... 889

N

NACHTMAN, E. S.
Residual stresses in cold-finished steel bars and their effects on manufactured parts (AC) ... 180

NATURAL GAS
Processes and product improvements to be anticipated with natural gas (A) ... 653

NAVAL VESSELS
Nuclear briefs (A) ... 945
Small submarine reactor prototype (A) ... 945

NEEDS, S. J.
Theory and practice of lubrication for engineers (BR) ... 1167

NEFF, ALLISON C.
NSPE position on state licensing laws (C) ... 96

NEIDHARDT, G. L.
On the transmission of a concentrated load into the interior of an elastic body (A) ... 954

NEITHAMER, C. D.
Electrification of oil well drilling rigs—using transportation-type equipment (A) ... 1155

NELSEN, ROBERT
Growth pattern of the engineer ... 978

NELSEN, JOHN T.
Obituary ... 798

NELSON, BERNARD STANLEY
Obituary ... 304

NELSON, HARLAN W.
Future of synthetic liquid and gaseous fuels ... 11

NELSON, WALDEMAR S.
What price the professional engineer? (D) ... 1063

NETWORKS. *See* GRAPHICAL METHODS

NEUHAUS, RALPH
Obituary ... 1094

NEWBERG, A. H.
Offshore drilling (D) ... 466

NEWMAN, D. P.
Creep damage in a Cr-Mo-V steel as measured by retained stress-rupture properties (A) ... 376

NEWMAN, L. L.
Future of synthetic liquid and gaseous fuels (D) ... 661

NEWTON, J. A.
Production surfacing of aluminized engine valves (A) ... 1049

NICHOLS, N. B.
Nonlinear integral compensation of a velocity-lag servomechanism with backlash (A) ... 746

NICKEL
"Paintings of Industry," an exhibition of 19 paintings of the operations of The International Nickel Company ... 1178
Vacuum-melting nickel-base alloys on a production scale ... 323

NIPPES, E. F.
Time-temperature effect on properties of weld heat-affected zone in type-347 stainless steel (A) ... 860

NITROGEN
Study to heat transfer to liquid nitrogen (A) ... 1049

NODULAR IRON. *See* CAST IRON

NOISE
Noise analyzer (A) ... 547

NOMOGRAMS. *See* GRAPHICAL METHODS

NONDESTRUCTIVE TESTING
Acceptance guides for ultrasonic inspection of large rotor forgings (A) ... 50

NONDISPERSION ANALYZERS. *See* INFRARED

NONFERROUS ALLOYS
Selection and application of spring materials ... 331
Spring materials (D) ... 869

NORRIS, R. H.
Tests of free convection in a partially enclosed space between two heated vertical plates (A) ... 1051

NORTON, J. H.
Unit loads for bulk materials ... 15

NORTON, J. T.
Cermets . . . for high-temperature service ... 319

NOWACKI, LEO MATTHEW
Obituary ... 1094

NOZZLES
Effect of ambient and fuel pressure on nozzle spray angle (A) ... 747
Increased life for gas-turbine combustion systems burning residual fuel (A) ... 748

NUCLEAR ENGINEERING. *See* ATOMIC ENERGY, POWER PLANTS—NUCLEAR

NUCLEAR ENGINEERING CONGRESS
Report on first nuclear congress in U. S., Cleveland, 1955 ... 187

NUMACHI, F.
Suppression of pump vibrations set up at starting up—preopening method (A) ... 459

NUTS. *See* BOLTED JOINTS, BOLTS AND NUTS

NYLON. *See* PLASTICS

O

OAKLEY, D. J.
Turbulent free-convection, heat-transfer rates in a horizontal pipe (A) ... 1154

OATLEY, HENRY BIGELOW
Elected to honorary membership in ASTM ... 1074

OBERHUBER, W. F.
Maintenance factors affecting production costs (A) ... 271

OCEANOGRAPHY
Oceanographic research (A) ... 937

OFFICE MACHINES
Data-processing system for record-keeping and accounting (A) ... 357

OFFSHORE DRILLING. *See* PETROLEUM INDUSTRY

OGDEN, MARK
Diesel engine's progress and future (A) ... 461

OIL FUEL
Filtration of No. 6 fuel oil to remove undesirable trace metals (A) ... 369
Improvement of distillate fuels by additive and refining techniques (A) ... 272
Upgrading burner performance of distillate fuel oils by hydrogen treatment (A) ... 272

OIL TANKS
Shifting oil storage tanks (A) ... 457

OLDENBURGER, RUFUS
Instrument engineering, vol. 3, Part 1 (BR) ... 276
Optimum nonlinear control (A) ... 656

OLSEN, AKSEL G.
Recent advances in food technology ... 802

OPTICAL INSTRUMENTS
Projection magnifier as reading aid (A) ... 357

ORDNANCE
Projectile research (A) ... 355

ORIFICES. *See* FLUID METERS

OSTERHOUT, DONALD P., JR.
Improvement of distillate fuels by additive and refining techniques (A) ... 272

OSTERLE, J. F.
Momentum diffusion from a slot jet into a moving secondary (A) ... 176

OSTRACH, S.
Convection phenomena in fluids heated from below (A) ... 178

OTTESEN, REALF
How to analyze the cost of machine tools ... 1002
Industrial diesel-power units (D) ... 566

OVERSTRUD, MELVIN
Obituary ... 798

OXYGEN. *See* IRON AND STEEL MANUFACTURE

OZKER, M. S.
Factors influencing the dynamic behavior of tall stacks under the action of wind (A) ... 173

P

PARISH, J. M.
Psychological tests in an engineering department ... 912

PARKER, N. A.
Rotary regenerator for gas turbines ... 862

PATENTS
Help break the patents backlog ... 204

PATON, BRUCE L.
Models as a design tool ... 1019

PATTERNS. *See* CASTING

PAYNE, FRANK EDWARD
Obituary ... 304

PEELER, R. L.
Oronite high-temperature hydraulic fluids 8200 and 8515 (A) ... 563

PELLINI, W. S.
Evaluation of the significance of Charpy tests for quenched and tempered steels (A) ... 856

PELOUBET, E. M.
Aluminizing aspects of fabricated pipe and piping components (A) ... 1161

PEMBERTON-PIGOTT, P.
Mechanical design features of the St. Lawrence Power Project (A) ... 854

PENSTOCKS
Water-hammer calculations and test results—Owen Gorge Power Plant penstocks (A) ... 174

PETERS, GEORGE A., JR.
Human engineering—a new approach to operational design ... 926

PETERSON, C. E.
Utilities systems for a 30,000-barrel-per-day refinery ... 430

PETERSON, R. E.
Large rotor forgings for turbines and generators ... 49

PETROCHEMICALS. *See* PETROLEUM INDUSTRY

PETROLEUM INDUSTRY. *See also* MANIFOLDS
Conference on petroleum and Middle East situation ... 896
Developments in instrumentation by the petrochemical industry ... 132
Lease automatic custody transfer (A) ... 1156
Maintenance challenge in a petrochemicals plant (A) ... 1157
Mechanical engineering progress in the petroleum industry (D) ... 467
Offshore drilling (D) ... 466

PETROLEUM PIPE LINES
Design of manifold fittings for special temperature and pressure conditions (A) ... 1158
Experience with positive displacement meters in oil pipe service (A) ... 1157
Remote control and operation of booster stations on the Platte pipeline system (A) ... 1162

PETROLEUM REFINING
Coke-processing plant to convert Gilsonite to coke and high-octane gasoline (A) ... 940
Materials aspect of some high-temperature, refining-piping applications (A) 1154
Utilities systems for a 30,000-barrel-per-day refinery ... 430

PETROLEUM-WELL EQUIPMENT
Application of diesel-electric traction power to oil well drilling (A) ... 1158
Electrification of oil well drilling rigs—using transportation-type equipment (A) ... 1155
On porosity and rock strength (A) ... 1157
Practical aspects of using diesel-electric railway equipment on drilling rigs (A) ... 1159
Radioactivity well logging (A) ... 160
Strength characteristics of rock samples under hydrostatic pressure (A) ... 1156

PHILIPSON, L. L.
On the role of extension in the flexural vibrations of rings (A) ... 864

PHOTOGRAPHY
Motion-analysis camera (A) ... 549
Stroboradiography (A) ... 944

PHYSIOLOGY
Descriptions and prediction of human response to aircraft thermal environments (A) ... 558
Elastic heart valve (A) ... 39

PILE DRIVERS
Pile hammer (A) ... 640

PILKINGTON, HAROLD EDWARD
Obituary ... 602

PINKUS, O.
Maximum temperature profile in journal bearings (A) ... 460

PIPE AND PIPING. *See also* PETROLEUM REFINING
Aluminizing aspects of fabricated pipe and piping components (A) ... 1161
Consumable-insert technique for pipe welding ... 145, (D) 661
Interpretations of 1955 Code for Pressure Piping ... 203

PIPE LINES. *See also* COAL HANDLING, PETROLEUM PIPE LINES
Design and selection of motor operated valves (A) ... 1155
Maintenance welding high-test line pipe (A) ... 1159

PIPING SYSTEMS
Effect of internal pressure on the flexibility and stress-intensification factors of curved pipe or welding elbows (A) ... 961
Performance of 6061-T6 aluminum flanged-pipe assemblies under hydrostatic pressure (A) ... 1159
Stiffness of curved circular tubes with internal pressure (A) ... 176

PIXLEY, H. J.
Effects of nonlinearities in multiloop lead-angle-prediction systems (A) ... 656

PLANNING
Industry under enemy attack ... 932

PLANT LAYOUT
Models as a design tool ... 1019

PLASTICITY. *See also* DEFORMATION
Certain departures from plastic ideality at small strains (A) ... 376
Effect of shear on the plastic bending of beams (A) ... 955
Impulsive loadings of elastic-plastic beams (A) ... 954
On the ideally plastic indentation of inset rectangular bands (A) ... 51
Studies on plastic flow of anisotropic metals (A) ... 175

PLASTICS. *See also* TEFLON
ASME Rubber and Plastics Division reviews progress with special emphasis on the accomplishments of 1955 ... 335
Load-carrying capacity of spur-gear teeth hob cut from molded du Pont "Zytel" 101 (A) ... 1153
Plastic-coated steel sheet (A) ... 943
Plastic springs (A) ... 638
Plastics as mechanical-engineering materials ... 337
Review of developments in plastics engineering . . . 1954–1955 ... 533
"Zytel" nylon resin ... 1118

PLATES
Bending of a uniformly loaded, semicircular plate, simply supported around the curved edge and free along the diameter (A) ... 955
Buckling of rectangular plates uniformly compressed in two perpendicular directions with one free edge and opposite edge elastically restrained (A) ... 953
Buckling of simply supported plates tapered in planform (A) ... 175
Effect of an acoustic medium on dynamic buckling of plates (A) ... 175
Elastoplastic thermal-stress analysis of a free plate (A) ... 866
High-frequency extensional vibrations of plates (A) ... 51
Influence of large amplitudes on free flexural vibrations of rectangular elastic plates (A) ... 865
On some problems in bending of thick circular plates on an elastic foundation (A) ... 176
On the torsion of rectangular sandwich plates (A) ... 176
Propagation of a sudden rotary disturbance in an elastic plate in plane stress (A) ... 51
Stress solutions for an infinite plate with triangular inlay (A) ... 957
Study of orthogonally stiffened plates (A) ... 954

PNEUMATIC DEVICES. *See also* INSTRUMENTS—MEASURING, MATERIALS HANDLING, SERVOMECHANISMS
On the dynamics of pneumatic-transmission lines (A) ... 963

PNEUMATIC DEVICES (*continued*)
Pneumatic conveying as adapted to the milling industry (A) ... 462

PODMORE, FRED HERBOTH
Obituary ... 404

POLK, LOUIS
Speaks on "infinity in action" ... 891

POND, CLARENCE E.
Biography ... 1191
Elected Fellow of ASME ... 1191

POPE, HOWARD LOUIS
Obituary ... 1200

POPE, S. H.
Lease automatic custody transfer (A) ... 1156

PORITSKY, H.
Hunting due to lost motion (A) ... 658

POWDER METALLURGY
Powder metallurgy—its role in the design of nuclear-power reactors (D) ... 181

POWELL, H. N.
Applications of an enthalpy-fuel/air-ratio diagram to "first law" combustion problems (A) ... 1057

POWER. *See also* SOLAR ENERGY, WORLD POWER CONFERENCE
Atomic power featured in ASME Exposition of Power and Mechanical Engineering ... 110
Electric-energy production (A) ... 359
Electric-power generation . . . past, present, and future ... 521
Energy sources to be exhausted in 100 years (A) ... 690
National Power Show returns to New York ... 677
Power Show, N. Y., 1956 ... 981

POWER PLANTS
Economic appraisal of nuclear versus hydro-power development in the Pacific Northwest (A) ... 654
Integration of steam and hydro power in Northern California (A) ... 653
Maintenance practices in a large internal-combustion power plant (A) ... 743

POWER PLANTS—GAS-TURBINE. *See also* POWER PLANTS—NUCLEAR
Combination gas-turbine and steam-turbine cycles (A) ... 369
El Paso's gas-turbine operating experience (A) ... 749
5000-kw dual-fuel gas turbine for industrial power (A) ... 1148
Gas turbine for mobile power unit (A) ... 752
Gas-turbine rotary regenerator design and development of prototype unit for 3000-hp plant (A) ... 754
Operating experience and design features of closed-cycle gas-turbine power plants (A) ... 753
Portable 5000-kw railway and skid-mounted gas-turbine power plants (A) ... 650
6200-kw gas-turbine-driven mobile power plant (A) ... 752

POWER PLANTS—HYDROELECTRIC
Generator-rotor construction (A) ... 456
Hydro power in the northwest (A) ... 653
Hydroelectric power in Europe (A) ... 950
Los Peares hydroelectric station (A) ... 262
Mechanical design features of the St. Lawrence Power Project (A) ... 854
Niagara Falls disaster recalls significance of first large-scale hydroelectric plant 685
Power from the Danube River (A) ... 950
Reversible pump-turbine unit (A) ... 541

POWER PLANTS—INDUSTRIAL
System of charging for steam in industrial plants with power generation (A) ... 375
Utilities systems for a 30,000-barrel-per-day refinery ... 430

POWER PLANTS—NUCLEAR. *See also* NUCLEAR ENGINEERING CONGRESS, PRESSURE VESSELS
Aqueous homogeneous reactors for producing central-station power (A) ... 375
Battelle research reactor (A) ... 1139
British atomic power station (A) ... 1138
British nuclear reactors (A) ... 635
Civilian atomic power plants (A) ... 448
Combination atom-gas turbine plant (A) ... 352
Dresden nuclear power station—preliminary design and economics (A) ... 265
French nuclear science (A) ... 635
Liquid-metal fuel reactor (A) ... 159
Liquid-metal-fuel reactor closed-cycle gas-turbine power plant ... 699
Low-power reactor (A) ... 847
Nuclear briefs (A) ... 258, 945, 1141
Nuclear Engineering, new British journal, commenced publication, April, 1956 ... 902

POWER PLANTS—NUCLEAR (*continued*)
Nuclear-engineering center (A) 41
Nuclear facilities plant (A) 633
Nuclear gas turbines; symposium covering the applications of various gas-turbine power systems to nuclear reactors 606
Nuclear Power Plants Meeting, Pittsburgh, 1956 287
Nuclear Science and Engineering, first issue released in March, 1956 902
Pittsburgh Section conference on nuclear power plants 386
Powder metallurgy—its role in the design of nuclear-power reactors (D) 181
Reactor development laboratory (A) 351
Reactor kinetics (A) 727
Reactor safeguards committee . . . its purpose, scope of activities in nuclear-power industry, and operating procedures 613
Reactor shielding design manual (BR) 469
Rolling mill for nuclear fuel elements (A) 1140
Shippingport reactor vessel (A) 1031
Small submarine reactor prototype (A) 945
Steel's role in nuclear engineering 329
Test of a once-through steam generator with a liquid metal as a heat source (A) 267
University of California launches graduate program in nuclear engineering 583

POWER PLANTS—STEAM. *See also* BOILERS, FEEDWATER TREATMENT, HIGH-TEMPERATURE MATERIALS, INSTRUMENTS—STEAM-CONSUMPTION, STEAM, STEAM SUPERHEATERS, STEAM TURBINES
Analytic procedure for optimizing the selection of power-plant components (A) 960
Avon No. 8—a supercritical-pressure plant (A) 959
Combination gas-turbine and steam-turbine cycles (A) 369
Estimating partial load performance of large reheat turbine generator units (A) 1150
First commercial steam generator at supercritical pressure (A) 653
First commercial supercritical pressure steam-electric generating unit for Philo Plant (A) 170
450,000-kw steam turbine-generators (A) 545
Instruments and control—key to economical performance of steam power plants (A) 1150
Kyger Creek Plant now in full operation (A) 161
Maintenance control in steam power plants (A) 265
New way to simplify the steam-power plant (A) 961
New Zealand thermal area and its development for power production (A) 177
Plant management and other factors affecting maintenance costs in steam generating stations (A) 267
Predicting performance of large steam turbine-generator units for central stations (A) 960
200,000-kw turbine-generator unit (A) 440

POWER PRESSES
Future heavy-press considerations in forging and extrusion (A) 157
Heavy presses now in production 214

POWER SHOVELS
World's largest shovel (A) 248

POWER SYSTEMS
England-France electric power link (A) 1147
OVEC power project (A) 443

PRAGER, WILLIAM
New method of analyzing stresses and strains in work-hardening plastic solids (A) 864

PRATT, CHARLES A.
Obituary 128

PRATT, ORVILLE R.
Obituary 1200

PREDICTION SYSTEMS. *See* AUTOMATIC CONTROL

PRENTIS, H. W., JR.
Essential factors of good management 1121

PRESSURE VESSELS
ASME code for unfired pressure vessels to supplant joint API-ASME code 580
Atomic reactor tank (A) 846
Considerations affecting future pressure-vessel codes (A) 861
Failure of a welded drying drum by caustic embrittlement 1105
Significance of fatigue data in design of pressure vessels (A) 857
Significance of the tensile test of pressure-vessel design (A) 858

PRINGLE, O. A.
Influence of shank area on the tensile impact strength of bolts (A) 461

PRODUCTION. *See* MANUFACTURING

PRODUCTION ENGINEERING. *See* MANUFACTURING

PROPELLERS. *See* MARINE PROPELLERS

PROPERTIES OF MATERIALS. *See* GAS TURBINES, *also specific materials*

PSYCHOLOGY
Psychological tests in an engineering department 912

PUGH, ACHILLES HENRY
Obituary 306

PULLEN, PHILIP ROYAL
Obituary 404

PULSATION. *See* FLUID METERS, INSTRUMENTS—PRESSURE, VIBRATION

PULVERIZED COAL
Flame radiation from pulverized coal (A) 263
Flow characteristics of aerated crushed coal (A) 272
Tests of an experimental coal-burning turbine (A) 273

PUMPING PLANTS
Field-testing a reversible pump-turbine 141
Reversible pump-turbine (D) 567
Water-column separation in pump-discharge lines (A) 174

PUMPS
Critical considerations on cavitation limits of centrifugal and axial-flow pumps (A) 458
Design of axial-flow pumps (A) 458
Liquid-metal (A) 542
Reversible pump-turbine unit (A) 541
Some aspects of high-suction specific-speed pump inducers (A) 458
Suppression of pump vibrations set up at starting up—preopening method (A) 459

PUMPS, CENTRIFUGAL. *See also* IMPELLERS
Hydraulic transients in centrifugal-pump systems (A) 174
Pumping in sealed systems (D) 96
Thermodynamic aspects of cavitation in centrifugal pumps (A) 174

PURVIS, M. B.
Temperature distribution in the journal bearing lubricant film (A) 460

PUZAK, P. P.
Evaluation of the significance of Charpy tests for quenched and tempered steels (A) 856

R

RADAR
Radar ruler for measuring great distances 840

RADER, I. A.
High-pressure pneumatic conveying in the lumber industry 722

RADIATION
"Hot lab" boon to SRI nuclear aircraft propulsion program 1182

RADIOACTIVITY. *See also* FOOD PROCESSING, PETROLEUM-WELL EQUIPMENT
Atomic-ray detector (A) 37
Neutrino detected (A) 728
Radioactive strontium fallout (Ed) 1097
Recent advances in food technology 802
Remote-control handling devices . . . for conducting research and development work behind shielding walls of "hot labs" 828

RADIOGRAPHIC INSPECTION
How radiographic inspection of lead linings can reduce future maintenance costs 245
Second look at radiographic inspection of lead linings during fabrication 1125
Stroboradiography (A) 944

RAILROAD CARS
Convertible freight car (A) 250
New lubrication pad for railroad car journal boxes (A) 729
Practical considerations in designing railway passenger cars 410
Progress in railway mechanical engineering, 1954–1955 218
Service testing of freight cars (A) 372

RAILROAD MECHANICAL ENGINEERING
Progress in railway mechanical engineering, 1954–1955 218

RAILROAD TRAINS
History and development of the ACF Talgo (A) 372

RAILROAD TRAINS (*continued*)
Pullman-Standard's Train X (A) 373

RAILROAD YARDS
Radar gravity switching yard (A) 165

RAILROADS
Remotely controlled railroad (A) 36

RALL, D. L.
Heat transfer to and temperature distribution in a metal-cutting tool (A) 459

RANKIN, A. W.
Acceptance guides for ultrasonic inspection of large rotor forgings (A) 50
Report of the investigation of the turbine-wheel fracture at Tanners Creek (A) 47
Report of the investigation of two generator-rotor fractures (A) 48

RAUDEBAUGH, R. J.
High-temperature corrosion of alloy exposed in the superheater of an oil-fired boiler (A) 269

RAVESE, T.
Pumping in sealed systems (D) 96

REACTORS. *See* ATOMIC ENERGY, POWER PLANTS—NUCLEAR

READ, GRANVILLE M.
American concept of freedom sparked technological explosion (A) 200
American engineers 789

READING AIDS. *See* OPTICAL INSTRUMENTS

RECLAMATION. *See* MANAGEMENT

REDDING, H. D.
Practical aspects of using diesel-electric railway equipment on drilling rigs (A) 1159

REETHOF, GERHARD
Analysis and design of a servomotor operating on high-pressure compressed gas (A) 963

REFRIGERANTS
Comparison of refrigerants when used in vapor compression cycles over an extended temperature range (A) 1051

REFRIGERATION. *See also* COOLING SYSTEMS
Closed circuit test loop (A) 1135
Survey of possible refrigerants for high-temperature application (A) 1054

REFUSE DISPOSAL
Criteria for municipal incinerators—the designer's view 1024
Design criteria for municipal incinerators—the customer's view (A) 1059

REGENERATORS. *See* GAS TURBINES

REID, J. T.
Named research manager of ASME 586

REIMERS, BERNHARDT FREDERICK
Obituary 404

REINEKING, W. H.
Human problems in the development of the F-102 cockpit (A) 558

REINTJES, J. F.
Automation in metalworking (D) 468

REMOTE CONTROL. *See* AUTOMATIC CONTROL, PETROLEUM PIPE LINES, RADIOACTIVITY, RAILROADS

REPKO, A. J.
Correlation of fir-tree-type turbine-blade fastening strength with mechanical properties of materials (A) 371

RESEARCH. *See also* ATOMIC ENERGY, COMPRESSORS, HIGH-TEMPERATURE RESEARCH, TURBINES, WIND TUNNELS
ASME project among 27 to receive Engineering Foundation grants 587
Langley Aeronautical Laboratory research on aerodynamic heating problems (A) 1131
National Carbon laboratory scientists discover how to "weld" graphite (A) 1132
NSF releases report on U. S. industrial research and development 203
Notes and comment 590, 996
Pegram Laboratory dedicated at Columbia University 200
U. K. mechanical-engineering research (A) 1146
Westinghouse Research Laboratories (A) 1038

RETTALIATA, JOHN T.
Role of technogical institutes in the years ahead 237

REYNST, F. H.
Pulsating, pressure-generating combustion systems for gas turbines (A) 272

RHEINGANS, WILLIAM J.
Reversible pump-turbine (D) 567

RICHARDS, R. L.
Turbine supervisory instruments (A).. 270

RICHARDS, R. T.
Water-column separation in pump-discharge lines (A)..... 174

RICHARDSON, H. H.
Design study of a hydrostatic gas bearing with inherent orifice compensation (A)..... 461

RICKETTS, EDWIN BURNLEY
Obituary..... 404

RIGGS, JOHN D.
Obituary..... 406

RIMMER, S. M.
Spring materials (D)..... 869

RING, FRANK, JR.
Remote-control handling devices..... for conducting research and development work behind shielding walls of "hot labs"..... 828

RINGS
On the role of extension in the flexural vibrations of rings (A)..... 864

RITTMAN, WALTER FRANK
Obituary..... 306

RIVER REGULATION
Steel jetties (A)..... 947

RIVERS, J. T., JR.
"Taslan" textured yarn.....

RIZIKA, J. W.
Liquid-droplet heating and evaporation in a high-temperature gas stream (A)..... 376
Thermal problems of high-speed flight and the General Electric Company's aircraft-cooling program (A)..... 1055

ROCK, S. M.
Process control by end-point analysis and associated data-reduction systems..... 137

ROCKETS
Research rocket (A)..... 1137
Three-stage rocket being designed to place man-made satellite in its orbit (A)..... 446

ROCKS
On porosity and rock strength (A)..... 1157
Strength characteristics of rock samples under hydrostatic pressure (A)..... 1156

ROCKWELL, WILLARD F.
Knighted by the Italian Government.. 993

RODABAUGH, E. C.
Effect of internal pressure on the flexibility and stress-intensification factors of curved pipe or welding elbows (A)..... 961
Performance of 6061-T6 aluminum flanged-pipe assemblies under hydrostatic pressure (A)..... 1159

ROGERS, LEWIS CHUBB
Obituary..... 210

ROHMANN, C. P.
On the dynamics of pneumatic-transmission lines (A)..... 963

ROHSENOW, W. M.
Comparison of refrigerants when used in vapor compression cycles over an extended temperature range (A)..... 1051
Effect of turbine-blade cooling on efficiency of a simple gas-turbine power plant (A)..... 274
Turboconditioning systems with vapor compression cycles (A)..... 1050

ROLLING MILLS
Rolling mill for nuclear fuel elements (A)..... 1140

RONAT, BELA
Evaluation of the prototype unit for the ASME high-temperature steam generation investigation (A)..... 173

ROSEN, C. G. A.
Analysis of development trends in industrial diesel-power units (AC).... 566

ROSING, WILLIAM H. V.
Obituary..... 602

ROSS, C. C.
Some aspects of high-suction specific-speed pump inducers (A)..... 458

ROSS, E. W., JR.
On the ideally plastic indentation of inset rectangular bands (A)..... 51

ROSS, J. E.
Program for controlling construction costs (A)..... 1162

ROSSHEIM, D. B.
Considerations affecting future pressure-vessel codes (A)..... 861

ROTORS *See also* GAS TURBINES, VIBRATION
Balancing turbine rotors in place (A)... 169

ROTORS (*continued*)
Large rotor forgings for turbines and generators..... 49
Modes of vibration of a certain system having a number of equal frequencies (A)..... 953
Report of the investigation of the turbine-wheel fracture at Tanners Creek (A)..... 47
Report of the investigation of two generator-rotor fractures (A)..... 48
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (A).... 176

ROUGHNESS INDICATORS
New American Standard for Surface Roughness, Waviness, and Lay (A).. 1061

ROWAND, WILL H.
First commercial supercritical pressure steam generator for Philo Plant (A).. 172

ROWE, A. R.
Research problems in production routing and scheduling (A)..... 464

RUBBER
ASME Rubber and Plastics Division reviews progress with special emphasis on the accomplishments of 1955..... 335
Bibliography..... 349
Engineering developments of rubber—September, 1954, August, 1955..... 341
Polyurethane rubber as a material of construction..... 1016
Properties and applications of Coral rubber—a cis-1, 4 polyisoprene..... 1098
Properties and applications of silicone rubber (A)..... 1059

RUITER, RAYMOND N.
Obituary..... 602

RUOFF, FREDERIC LEXINGTON
Obituary..... 1094

RUPP, H. H.
Portable 5000-kw railway and skid-mounted gas-turbine power plants (A)..... 650

RUSSELL, EDWARD AMBROSE
Obituary..... 1200

RUSSIA
ASME team reports on recent inspection tour of Russian manufacturing plants 295
Exchange visits established between Russian and American engineers by State Department proposal..... 108
Materials handling in the Soviet Union. 509
Russian engineering and scientific manpower (A)..... 439

RUSZCZAK, R.
Machine-tool automation and feedback (A)..... 741

RYAN, WILLIAM FRANCIS
Biography..... 786
Nominated for president..... 785

S

SADOWSKY, M. A.
Bending of a uniformly loaded, semicircular plate, simply supported around the curved edge and free along the diameter (A)..... 955

SAFETY ENGINEERING. *See also* VENTILATION
Planning for safety..... 815

SAGE, B. H.
Mollier diagrams for water near bubble point (A)..... 1154

SAGE, W. L.
Multifuel-firing of cyclone furnaces.... 823

SALES ENGINEERING
Young mechanical engineer in sales.... 202

SALTZER, BERTRAM HANSON
Obituary..... 798

SALVESON, M. E.
Computers and production engineering (D)..... 1062

SAMPLING. *See* GAS ANALYSIS, GAS CLEANERS, STEAM

SAMS, JAMES H.
Biography..... 787
Nominated for Regional Vice-President 787

SANKEY, G. O.
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (A).... 176

SATELLITES
Man-made earth satellites (A)..... 553

SAUNDERS, B. W.
Relating materials-handling costs to over-all production costs..... 419

SAWARAGI, Y.
Spectral response of control system containing zero-memory nonlinearity to random inputs (A)..... 655

SAWDUST
Suspension-drying of sawdust. 627, (D) 1166

SAWYER, J. W.
33,000 hr on marine gas turbines in naval service (A)..... 862

SAWYER, R. TOM
Biography..... 1191
Elected Fellow of ASME..... 1191

SCHAAF, B.
Time-temperature effect on properties of weld heat-affected zone in type-347 stainless steel (A)..... 860

SCHABTACH, C.
Report of the investigation of two generator-rotor fractures (A)..... 48

SCHAEFER, ADOLPH O.
Work of the task group on brittle failure of large steel forgings (A)..... 50

SCHAIRER, GEORGE S
High-speed problems of large airplanes. 832

SCHARNBERG, L. N.
Offshore drilling (D)..... 466

SCHELL, ERWIN H.
Biography..... 1191
Elected Fellow of ASME..... 1191

SCHELLER, JOHN A.
The young mechanical engineer in research and development..... 396

SCHELP, H. R.
The versatile gas turbine (A)..... 651

SCHEUBLE, P. A., JR.
Practical equipment-replacement economics (A)..... 654

SCHMIT, L. A.
Some structural penalties associated with thermal flight (A)..... 560

SCHNITT, A.
Optimum stresses of structural elements at elevated temperatures (A)..... 561

SCHOLARSHIPS. *See* EDUCATION

SCHRECK, HENRY
Obituary..... 500

SCHUELER, L. B.
Boiler cleaning—methods and controls (A)..... 1149

SCHUMAN, R. H.
Electrohydraulic servomechanisms with an ultrahigh frequency response (A).. 657

SCHUSTER, E. C.
Measurement of engine response to sudden load changes (A)..... 743

SCHUYLER, WILLIAM A.
Obituary..... 128

SCHWINDEMAN, W. R.
Improvement of distillate fuels by additive and refining techniques (A)..... 272

SCIENCE
The foreseeable future (BR)..... 182
Science changes the scientist tool..... 231

SCOTT, L. R.
Influence of through-metal on heat transfer through aircraft-structural-sandwich panels (A)..... 1052

SCREWS
Rolling classroom to demonstrate proper application of wire screw-thread inserts (A)..... 939

SEALS
Seal leakage in the rotary regenerator and its effect on rotary-regenerator design for gas turbines (A)..... 178

SEARS, W. R.
On the wake energy of moving cascades (A)..... 175

SEBOLD, R. C.
The challenge of progress in air technology..... 696

SEGUIN, B. R.
Report of the investigation of the turbine-wheel fracture at Tanners Creek (A)..... 47

SEIDE, PAUL
Axisymmetrical buckling of circular cones under axial compression (A)... 953
On the torsion of rectangular sandwich plates (A)..... 176

SEILER, J. A.
Impulsive loadings of elastic-plastic beams (A)..... 954

SENSEMAN, WILLIAM BURGESS
Obituary..... 889

SERVOMECHANISMS. *See also* VIBRATION
Analysis and design of a servomotor operating on high-pressure compressed gas (A)..... 963

SERVOMECHANISMS (*continued*)
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism (A) 655
Dual-mode damper-stabilized servo (A) 657
Effects of nonlinearities in multiloop lead-angle-prediction systems (A) 656
Electrohydraulic servomechanisms with an ultrahigh frequency response (A) 657
Hunting due to lost motion (A) 658
Nonlinear analog study of a high-pressure pneumatic servomechanism (A) 746
Nonlinear integral compensation of a velocity-lag servomechanism with backlash (A) 746

SFORZINI, L. J.
System of charging for steam in industrial plants with power generation (A) 375

SHAFFER, BERNARD W.
Analysis of the orthogonal boring operation (A) 174

SHANNON, R. H.
Test of a once-through steam generator with a liquid metal as a heat source (A) 267

SHARMA, BRAHMADEV
Thermal stresses in infinite elastic disks (A) 954

SHAW, M. C.
Influence of lead on metal-cutting forces and temperatures (A) 963
Leaded steel and the real area of contact in metal cutting (A) 963

SHEARER, J. L.
Nonlinear analog study of a high-pressure pneumatic servomechanism (A) 746

SHEEHAN, T. V.
Liquid-metal-fuel reactor closed-cycle gas-turbine power plant 699

SHEET METAL. *See also* METAL COATING
Tube-in-strip mill products (A) 252

SHEETS, H. E.
Slotted-blade axial-flow blower (A) 459

SHELL MOLDING. *See* FOUNDRY PRACTICE

SHELLS
Effect of imperfections on buckling of thin cylinders under external pressure (A) 864
Influence of blast characteristics on the final deformation of circular cylindrical shells (A) 952
Minimum-weight design of cylindrical shells (A) 956
Study of axisymmetric vibrations of cylindrical shells as affected by rotatory inertia and transverse shear (A) 51
Tables of functions for short cylindrical shells (A) 1152

SHEN, C. H.
Nonlinear integral compensation of a velocity-lag servomechanism with backlash (A) 746

SHEPPARD, RAYMOND
First commercial supercritical pressure steam turbine generator for the Philo Plant (A) 171

SHERWOOD, EDWARD LEGGETT
Obituary 406

SHIELDS, C. H., JR.
Filtration of No. 6 fuel oil to remove undesirable trace metals (A) 369

SHINBROT, MARVIN
On the analysis of linear and nonlinear systems (A) 656

SHOEMAKER, R. C.
Design of over-hanging attachments for crawler tractors (A) 649

SHOEMAKER, ROBERT JAY
Obituary 210

SHORT, B. E.
Temperature and velocity distribution in turbulent flow of mercury (A) 377
Transfer of heat and momentum in a turbulent stream of mercury (A) 178

SHULESHKO, P.
Buckling of rectangular plates uniformly compressed in two perpendicular directions with one free edge and opposite edge elastically restrained (A) 953

SHUMAKER, C. H.
Biography 788
Nominated for Regional Vice-President 788

SIEGEL, ROBERT
Tests of free convection in a partially enclosed space between two heated vertical plates (A) 1051

SIGNALLING. *See* TELEVISION

SILICONES. *See also* RUBBER
Silastic heart valve (A) 39

SIMONDS, GORDON WILLIAM
Obituary 1200

SINCLAIR, G. M.
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A (A) 375

SINES, GEORGE
Failure of a welded drying drum by caustic embrittlement 1105

SINNOT, EDMUND W.
Science changes the scientist too! (D) 760

SKAFF, P. S.
Maintenance challenge in a petrochemicals plant (A) 1157

SKIBA, WILLIAM
How radiographic inspection of lead linings can reduce future maintenance costs 245
Second look at radiographic inspection of lead linings during fabrication 1125

SKINNER, CHARLES BOERNER, JR.
Obituary 406

SKINNER, SHERROD E.
Biography
Elected Fellow of ASME 1192

SLAVERY
Engineer's greatest achievement 239

SLUICE GATES
Sluice gate for closing dikes (A) 366

SMITH, A. N.
5000-kw dual-fuel gas turbine for industrial power (A) 1148

SMITH, CHARLES RICHARD
Obituary 798

SMITH, E. H.
Burning fluid coke 921

SMITH, ELLSWORTH WALTERS
Obituary 306

SMITH, HENRY SIDNEY
Obituary 306

SMITH, J. O.
Factors influencing the dynamic behavior of tall stacks under the action of wind (A) 173

SMITH, P. A.
Influence of lead on metal-cutting forces and temperatures (A) 963
Leaded steel and the real area of contact in metal cutting (A) 963

SMITH, RALPH EMMETT
Obituary 128

SMITH, RONALD B.
Turboblowers (BR) 183

SMITH, V. W.
Biography 788
Nominated for Administrative Director 788

SMITH, W. A.
Properties and applications of Coral rubber—a cis-1, 4 polyisoprene 1098

SMITH, W. P.
Steps toward more creative production engineering (A) 1049

SMOKE, E. J.
Ceramics as basic engineering materials 315

SMOOT, R. L.
Rotary regenerator for gas turbines (A) 862

SODERBERG, C. R.
Who's who in engineering (D) 378

SODERBERG, C. R., JR.
Considerations affecting future pressure-vessel codes (A) 861

SOLAR ENERGY
Devices to harness the sun's power 106
Power from solar energy—some fundamental factors (A) 1150
Solar energy for homes (A) 1136
Solar energy research (BR) 379
Solar furnace...new tool for high-temperature work 915
Utilization of solar furnaces in high-temperature research (A) 562
World Symposium on Applied Solar Energy proceedings published 479
World symposium on solar energy held in Arizona 104

SOLDERING
New soldering technique (A) 35

SOLNICK, R. L.
Apparatus for sampling particulate matter in high-pressure gas streams (A) 1161

SOMERS, E. V.
High-speed guarded-hot-plate apparatus for thermal conductivity of thermal insulation (A) 177

SOMERS, W. E.
High-temperature corrosion of alloy exposed in the superheater of an oil-fired boiler (A) 269

SOO, S. L.
Some design aspects of the free-piston gas-generator-turbine plant
Part I, thermodynamics and component characteristics (A) 371
Part II, controls and accessories (A) 370

SOUTHACK, TILDEN WARD
Obituary 406

SPAHR, J. C.
Turbine supervisory instruments (A) 270

SPARROW, E. M.
Laminar free-convection heat transfer from the outer surface of a vertical circular cylinder (A) 177

SPECTROGRAPHIC ANALYSIS. *See* LUBRICANTS

SPECTROSCOPIC ANALYSIS. *See* INFRARED

SPEED, WILLIAM SHALLCROSS
Obituary 306

SPENCE, HUBERT DE LASERRE
Obituary 128

SPENCER, R. C.
Properties of steam at high pressures—an interim steam table.....615, (D) 1165

SPHERES
On the torsional oscillations of a solid sphere in a viscous fluid (A) 864

SPEISS, CHARLES BERNARD, JR.
Obituary 406

SPOTTON, ARTHUR KNOWLSON
Obituary 128

SPOTTS, M. F.
Application of complex geometry to relative velocities and accelerations in mechanisms (A) 1152

SPRAYS. *See* NOZZLES

SPRINGS
Plastic springs (A) 638
Prestressed spring motor for motion-picture camera (A) 1136
Selection and application of spring materials 331
Spring materials (D) 869
Wave propagation in an elastic rod exhibiting internal coulomb friction, considered as a model for a ring spring (A) 954

STACKS. *See* CHIMNEYS

STAHL, H. A.
Thermodynamic aspects of cavitation in centrifugal pumps (A) 174

STALL. *See* COMPRESSORS

STANBRIDGE, CHARLES HENRY
Obituary 406

STANDARDS
Gaillard Seminar on industrial standardization, 1956 587
Seventh National Conference on Standards 1171

STANLEY, R. J.
Design of a large coal-fired steam generator for 200 F exit-gas temperature and operating experience with pilot plant (A) 266

STEAM
Flow sampling and discharge measurement in geothermal bores (A) 377
New Zealand thermal area and its development for power production (A) 177
Properties of steam at high pressures—an interim steam table.....615, (D) 1165
Viscosity of steam, heavy-water vapor, and argon at atmospheric pressure up to high temperatures (A) 275

STEAM SUPERHEATERS
Experimental superheater for steam at 2000 psi and 1250 F—report after 14,281 hours of operation (A) 173
High-temperature corrosion of alloy exposed in the superheater of an oil-fired boiler (A) 269

STEAM TURBINES. *See also* FORGINGS, INSTRUMENTS — STEAM - CONSUMPTION, INSTRUMENTS — TURBINE - SUPERVISING, ROTORS
Bending of a uniformly loaded, semicircular plate, simply supported around the curved edge and free along the diameter (A) 955
Butt welding austenitic stainless steel to ferritic steel in cylindrical shapes (A) 859
First commercial supercritical pressure steam turbine generator for the Philo Plant (A) 171
Investigation of large steam-turbine spindle failure (A) 46
Pametrada research station
.....(A) 44, (correction) 264
Planned turbine testing program (A) 270
Report of the investigation of the turbine-wheel fracture at Tanners Creek (A) 47

STEAM TURBINES (*continued*)
Super-alloy for steam turbine blades (A) ... 732

STEEL. *See also* IRON AND STEEL MANUFACTURE, METAL CUTTING
Materials aspect of some high-temperature, refinery-piping applications (A) 1154
Steel's role in nuclear engineering ... 329

STEEL ALLOYS
Effect of cold work on elevated-temperature properties of types 301, 305, and 310 stainless steels (A) ... 962
Evaluation of the significance of Charpy tests for quenched and tempered steels (A) ... 856
Modified chromium steel (A) ... 947
Selection and application of spring materials ... 331
Spring materials (D) ... 869
Time-temperature effect on properties of weld heat-affected zone in type-347 stainless steel (A) ... 860

STEERING SYSTEMS. *See* MOTOR VEHICLES

STEINMEYER, JOHN W.
Obituary ... 1094

STEPANOFF, A. J.
Thermodynamic aspects of cavitation in centrifugal pumps (A) ... 174

STEPHENSON, M.
Air-cooled electronic chassis (A) ... 177

STERN, STUART
Application of superheated-vapor atmospheres to drying ... 423

STERNBERG, ELI
On the transmission of a concentrated load into the interior of an elastic body (A) ... 954

STERNLICHT, B.
Maximum temperature profile in journal bearings (A) ... 460

STETSON, GEORGE A.
"The Prof" (Ed) ... 801

STEVENS, L. R., JR.
Systematic study of air cycles for aircraft cooling applications (A) ... 1053

STEVENS, R. A.
Mean temperature difference in one, two, and three-pass crossflow heat-exchangers (A) ... 460

STEWART, DAVID WHYTE
Obituary ... 602

STICHA, E. A.
Materials aspect of some high-temperature, refinery-piping applications (A) 1154

STICKLE, HAROLD E.
The Hoover Commission article (C) ... 967

STIRTON, R. I.
Oronite high-temperature hydraulic fluids 8200 and 8515 (A) ... 563

STODDARD, ELGIN
Obituary ... 889

STOKERS
Wood-refuse spreader-stoker firing of two steam generators (A) ... 652

STONE, JOHN RANSOM
Obituary ... 798

STORCH, H. H.
Future of synthetic liquid and gaseous fuels (D) ... 661

STORMS. *See* WAVE MECHANICS

STOUGHTON, L. D.
Liquid-metal-fuel reactor closed-cycle gas-turbine power plant ... 699

STOUT, T. M.
Basic methods for nonlinear control system analysis (A) ... 659
Design and analog-computer analysis of an optimum third-order nonlinear servomechanism (A) ... 655

STOVER, ROLLAND S.
Biography ... 787
Nominated for Regional Vice-President 787

STRAKA, LEORA E.
Engineering developments of rubber—September, 1954, August, 1955, ... 341

STREET, LOCKWOOD NORTHCOTT
Obituary ... 128

STRESSES AND STRAINS. *See also* ELASTICITY, IMPACT, PIPING SYSTEMS, PLASTICITY, THERMAL STRESSES
Comparison of slip-line solutions with experiment (A) ... 51
Creep stresses and deflections of columns ... 52
Experimental investigation of beam stresses produced by oblique impact of a steel sphere (A) ... 957

STRESSES AND STRAINS (*continued*)
Influence of grinding fluids upon residual stresses in hardened steel (A) ... 459
Method for calculating stress-concentration factors (A) ... 374
New method of analyzing stresses and strains in work-hardening plastic solids (A) ... 864
On the carrying capacity of redundant structures (A) ... 867
On the determination of a viscoelastic model for stress analysis of plastics (A) ... 957
On the stresses in a strip under tension and containing two equal circular holes placed longitudinally (A) ... 955
On the transmission of a concentrated load into the interior of an elastic body (A) ... 954
Optimum stresses of structural elements at elevated temperatures (A) ... 561
Propagation of a sudden rotary disturbance in an elastic plate in plane stress (A) ... 51
Residual stresses in cold-extruded aluminum (A) ... 174
Residual stresses in cold-finished steel bars (D) ... 180
Stress distribution in a strip loaded in tension by means of a central pin (A) ... 176
Stresses in metals; results of research at the National Bureau of Standards (A) 1036
Study of orthogonally stiffened plates (A) ... 954
Three "neutral" loading tests (A) ... 953
Wave propagation in an elastic rod exhibiting internal coulomb friction, considered as a model for a ring spring (A) ... 954

STROBOSCOPY. *See* PHOTOGRAPHY

STRUCTURES. *See also* AIRPLANE WINGS, AIRPLANES, BEAMS, COLUMNS, PLATES
High-speed problems of large airplanes ... 832
Impact-loading bomb for structural tests (A) ... 847
Influence of through-metal on heat transfer through aircraft-structural-sandwich panels (A) ... 1052
Mathematical analysis of bow girders of any shape (A) ... 865
On the carrying capacity of redundant structures (A) ... 867
Optimum stresses of structural elements at elevated temperatures (A) ... 561
Thermostructural efficiencies of compression elements and materials (A) ... 561

STUART, W. L.
Developments in instrumentation by the petrochemical industry ... 132, 759

STUBBS, H. E.
Development and evaluation of an icing indicator (A) ... 558

STYRI, HAAKON
Obituary ... 1200

STYS, Z. STANLEY
6200-kw gas - turbine - driven mobile power plant (A) ... 752

SUPERCRITICAL PRESSURE. *See* POWER PLANTS—STEAM

SUPERHEATERS. *See* STEAM SUPERHEATERS

SUPERSONIC FLOW
Propulsion wind tunnel at NACA Lewis Laboratory ... 1007

SUPERVISION. *See* MANAGEMENT

SURFACE FINISH
Friction in a close-contact system ... 529
New American Standard for Surface Roughness, Waviness, and Lay (A) ... 1061

SURGES. *See* WATER HAMMER

SURVEYING
Radar ruler for measuring great distances ... 840

SUTHERLAND, J.
Foundry automation and the shell-molding process (A) ... 376

SWATMAN, I. M.
Development of high-speed sleeve bearings for a solar 500-hp gas-turbine engine (A) ... 750

SWIKERT, M. A.
Difluorodichloromethane as a boundary lubricant for steel and other metals ... 233

SWITCHGEAR. *See* ELECTRICAL EQUIPMENT

SYMONDS, P. S.
Impulsive loadings of elastic-plastic beams (A) ... 954

SYNTHETIC PRODUCTS. *See* FUELS

T

TAFT, C. K.
Electrohydraulic servomechanisms with an ultrahigh frequency response (A) ... 657

TAKAHASHI, S.
Spectral response of control system containing zero-memory nonlinearity to random inputs (A) ... 655

TALBOT, JAMES MARTIN
Obituary ... 798

TALBOURDET, GUY JULIEN
Obituary ... 1094

TANKS. *See* OIL TANKS

TARASOV, L. P.
Residual stresses in cold-finished steel bars (D) ... 180

TATE, THOMAS ROUSE
Obituary ... 406

TAYLOR, C. F.
Mass flowmeter for in-flight refueling (A) ... 564

TAYLOR, C. L.
Descriptions and prediction of human response to aircraft thermal environments (A) ... 558

TAYLOR, FREDERICK W.
Birth centenary celebrated at 1956 Management Conference ... 195
Taylor—and an opportunity (Ed) ... 309

TEARNEN, J. O.
Graphical methods for the temperature response of bodies in a varying temperature medium (A) ... 177

TECHNOLOGY
American concept of freedom sparked technological explosion (A) ... 200
Conference on technology for Israel and the Middle East ... 201
The foreseeable future (BR) ... 182
A history of technology, vol. 1, from early times to fall of ancient empires (BR) ... 276

TEFLON
Linear thermal expansion of Teflon (A). 1018
Lubrication-free bearings (A) ... 729

TELEVISION
Tactical TV camera (A) ... 356

TEMPERATURE MEASUREMENT. *See* INSTRUMENTS—TEMPERATURE

TESTING. *See* AIRPLANE ENGINES, HYDROSTATIC TESTING, PETROLEUM WELL EQUIPMENT, STEAM TURBINES, STRESSES AND STRAINS, WOOD CONSTRUCTION

TEXTILES
Engineering aspects of textile structures 517
"Taslan" textured yarn ... 7

THEOCARIS, P. S.
Stress distribution in a strip loaded in tension by means of a central pin (A) 176

THERMAL CONDUCTIVITY. *See* HEAT TRANSFER

THERMAL STRESSES
Elastoplastic thermal-stress analysis of a free plate (A) ... 866
Thermal stresses in infinite elastic disks (A) ... 954

THERMODYNAMICS. *See also* GAS TURBINES
Applications of an enthalpy-fuel/air-ratio diagram to "first law" combustion problems (A) ... 1057
Mollier diagrams for water near bubble point (A) ... 1154
Novel method of obtaining an isothermal surface for steady-state and transient conditions (A) ... 1051
Systematic study of air cycles for aircraft-cooling applications (A) ... 1053

THOMAS, R. DAVID, JR.
Consumable-insert technique for pipe welding ... 145, 661

THOMPSON, B. J.
Hydraulic drives using rich-oil power units (A) ... 1161

THOMPSON, L. D.
Combustion system for spark-fired gas engines using diesel compression ratios (A) ... 743

THOMPSON, L. M.
Study of heat transfer to liquid nitrogen (A) ... 1049

THOMPSON, MILTON J.
Biography ... 902
Elected Fellow of ASME ... 902

THOMPSON, N. D.
Handling timber with the fork-lift truck and materials carrier (A) 648

THOMPSON, O. C.
Obituary 602

THOMSEN, E. G.
Comparison of slip-line solutions with experiment (A) 51
Residual stresses in cold-extruded aluminum (A) 174
Some studies of angle relationships in metal cutting (A) 459

THRASHER, L. W.
Practical application of uncertainty calculations to measured data (A) 464

THRELKELD, C. B.
Prevention of destructive engine failure by spectographic analysis of crankcase oil (A) 1159

THUERK, HUGH CAMPBELL
Obituary 128

THURLOW, OSCAR GOWEN
Obituary 681

TILTON, L. G.
Test facilities—aeronautical turbine laboratory 927

TITANIUM. *See also* METAL CUTTING
Application of a new structural index to compare titanium alloys with other materials in airframe structures (A) 560
Effect of surface finish on the fatigue strength of titanium alloys RC 130B and Ti 140A (A) 375
Growth of titanium industry (A) 257
High-flying Ti (A) 651
Second NYU titanium school marked by technological optimism 1072
Titanium-metal production (A) 550

TODD, DANIEL J.
J69 engine—two applications of a small turbojet (A) 1056

TODD, JAMES M.
What price the professional engineer? 515, 1063

TOLINS, I. S.
On the stresses and deflections of rectangular beams (A) 865

TOOLS. *See also* MACHINE TOOLS
Torque control impactool (A) 251
U. S. National Museum to enlarge Hall of Tools exhibit 1070

TOPPING, A. D.
On porosity and rock strength (A) 1157

TORQUE
Dynamics of instrument bearing torque testing (A) 462

TORSION
On the torsion of rectangular sandwich plates (A) 176

TOTH, RICHARD HALE
Obituary 406

TOWNSEND, ALBERT COOLEY
Obituary 128

TRABANT, E. A.
Mechanical computing device for the analysis of one-dimensional transient heat-conduction problems (A) 1053

TRACTORS. *See* MOTOR VEHICLES

TRANSISTORS
Modernization of air-borne electronic equipment by the use of transistors (A) 559

TRANSPORTATION
Overhead monorail transit system (A) 448

TREADWELL, K. M.
Comparison of refrigerants when used in vapor compression cycles over an extended temperature range (A) 1051
Turboconditioning systems with vapor compression cycles (A) 1050

TRIBUS, MYRON
Development and evaluation of an icing indicator (A) 558

TRUCKS. *See* MATERIALS HANDLING

TSCHAPPAT, WILLIAM HARVEY
Obituary 128

TUBES
Evaluation of the prototype unit for the ASME high-temperature steam generation investigation (A) 173
Pressure drop and flow characteristics of short capillary tubes at low Reynolds numbers (A) 958
Tube-in-strip mill products (A) 252

TURBINES. *See also* GAS TURBINES, HYDRAULIC TURBINES, STEAM TURBINES
Drag-turbine performance (A) 559
Facilities and instrumentation for compressor and turbine research at the NACA Lewis Flight Propulsion Laboratory (A) 1059

TURBINES (*continued*)
Test facilities—aeronautical turbine laboratory 927

TURBOJETS. *See* AIRPLANE ENGINES

TURBOMACHINERY
Experimental arrangement for the measurement of the pressure distribution on high-speed rotating blade rows (A) 747

U

UICKER, JOHN J.
Importance of registration in improving the status of engineers 1103

ULLMANN, J. E.
Cost criteria of design change in industrial products (A) 1153

ULTRASONICS. *See also* GRINDING, NONDESTRUCTIVE TESTING
Ultrasonic inspection simulator for the training of ultrasonic inspectors of large forgings (A) 1041

UNITED ENGINEERING TRUSTEES
Annual report for 1954–1955 113
Officers elected for 1957 1180
Plans for Engineering Center due early in 1957 1179

UPADI
Fourth convention, Mexico City, 1956 877, 1176

V

VACUUM MELTING. *See* METALLURGICAL FURNACES

VALENTINE, PHILIP J.
Measuring ramjet tailpipe temperatures (A) 564

VALVES
Bending and impact tests of cast-iron, cast-steel, and nodular-iron valve bodies 23, (D) 661
Cavitation characteristics of gate valves and globe valves used as flow regulators under heads up to about 125 ft (A) 1151
Design and selection of motor operated valves (A) 1155
Development of hydraulic operation for gates and valves (A) 1151
Effects of adjacent piping configurations on control-valve characteristics and capacity (A) 273
Procedures for evaluation of control-valve mechanical characteristics (A) 460
Production surfacing of aluminized engine valves (A) 1049
Some hydrodynamic aspects of valves (A) 461
Test procedures for the evaluation of control-valve flow performance (A) 461

VAN DER HORST, J. M. A.
Heavy fuel and cylinder wear in marine diesel engines (A) 745

VAN DER PYL, L. M.
Bibliography on diaphragms and aneroids (A) 374

VAN GILST, PETER C.
Obituary 406

VAN HAUTE, ANDRE
Mollier diagrams for water near bubble point (A) 1154

VAN LEER, BLAKE RAGSDALE
Obituary 502

VAN ORNUM, V. W.
Development of a centrifugal compressor for a small gas-turbine engine (A) 751

VAN WICKLIN, W. A.
Hydraulic power steering—effects of valve characteristics and steering-wheel inertia (A) 460

VAN WINKLE, J.
Survey of possible refrigerants for high-temperature application (A) 1054

VAPORS. *See* GASES

VASU, G.
Experiments with optimalizing controls applied to rapid control of engine pressures with high-amplitude noise signals (A) 658

VAZQUEZ, A. J.
Design of manifold fittings for special temperature and pressure conditions (A) 1158

VENTILATION
Engineering manual for control of in-plant environment in foundries (BR) 1064
Factors in exhaust ventilation system design for the safety engineer (A) 1060
Plant and process ventilation (BR) 1064
Ventilated cloth as a protection against heat exposure (A) 558

VIBRATION
Balancing turbine rotors in place (A) 169
Effect of hub radius on the vibrations of a uniform bar (A) 176
Electronic analog-computer solutions of nonlinear vibratory systems of two degrees of freedom (A) 952
High-frequency extensional vibrations of plates (A) 51
Hydraulic-turbine runner vibration (A) 459
Influence of large amplitudes on free flexural vibrations of rectangular elastic plates (A) 865
Modes of vibration of a certain system having a number of equal frequencies (A) 953
On the determination of a viscoelastic model for stress analysis of plastics (A) 957
On the role of extension in the flexural vibrations of rings (A) 864
On the theory of the acceleration damper (A) 865
Pulsation absorbers—their design and application (A) 1161
Some dynamic properties of oil-film journal bearings with reference to the unbalance vibration of rotors (A) 176
Study of axisymmetric vibrations of cylindrical shells as affected by rotatory inertia and transverse shear (A) 51
Suppression of pump vibrations set up at starting up—preopening method (A) 459
Viscous damper design refinements for servo-mechanisms (A) 1060

VICKERS, HARRY F.
Receives ASME Medal 1074

VIDOSIC, J. P.
Curved beams with eccentric boundaries (A) 1152

VIEHMANN, NORMAN J.
Report from Canada on professional development 676

VINCENT, HARRY STUART
Obituary 502

VISCOSITY
On the torsional oscillations of a solid sphere in a viscous fluid (A) 864
Viscosity of steam, heavy-water vapor, and argon at atmospheric pressure up to high temperatures (A) 275

VON DER RECKE, HANS W.
European design trends in mechanical materials handling 906

W

WAHL, A. M.
Analysis of creep in rotating disks based on the Tresca criterion and associated flow rule (A) 175
Recent research on flat diaphragms and circular plates with particular reference to instrument applications (A) 373

WALDMAN, STEPHEN ALLEN
Obituary 128

WALES, E. W.
Fluid flow through two orifices in series. III—the parameters of metastable and stable flow of hot water (A) 271

WALKER, JACK
Process control by end-point analysis and associated data-reduction systems 137

WALSH, B. R.
Upgrading burner performance of distillate fuel oils by hydrogen treatment (A) 272

WALSH, O. E.
Hydro power in the northwest (A) 653

WANG, A. J.
Wave propagation in an elastic rod exhibiting internal coulomb friction, considered as a model for a ring spring (A) 954

WANG, S. J.
Viscosity of steam, heavy-water vapor, and argon at atmospheric pressure up to high temperatures (A) 275

WANGAARD, FREDERICK F.
Forestry handbook (BR) 761

WARD, J. C.
Energy sources to be exhausted in 100 years (A) ... 690

WARD, J. E.
Dual-mode damper-stabilized servo (A). 657

WARD, J. T.
Procedures for evaluation of control-valve mechanical characteristics (A). 460

WARNER, RUSSELL G.
Professional aspects of the practice of engineering ... 28

WARREN, GLENN B.
Receives honorary DS degree from Union College ... 1074

WARRINER, W. C.
"Zytel" nylon resin ... 1118

WASIELEWSKI, E. W.
Propulsion wind tunnel at NACA Lewis Laboratory ... 1007

WATER-COLUMN SEPARATION. *See* PUMPING PLANTS

WATER HAMMER
Hydraulic transients in centrifugal-pump systems (A) ... 174
Surge-wave velocity—concrete pressure pipe (A) ... 174
Waterhammer analysis (BR) ... 663
Water-hammer calculations and test results—Owen Gorge Power Plant penstocks (A) ... 174

WATERS, WILLIAM LAURENCE
Obituary ... 602

WATERWAYS. *See* SLUICE GATES

WATSON, BRUCE B.
Engineering for profit (D) ... 868

WATSON, C. W.
Maintenance factors affecting production costs (A) ... 271

WATTS, G. A.
Multifuel-firing of cyclone furnaces ... 823

WAVE MECHANICS. *See also* STRESSES AND STRAINS
Storm-surges project (A) ... 158

WEAR
Conference on lubrication and wear to be held in London, 1957 ... 484
Heavy fuel and cylinder wear in marine diesel engines (A) ... 745

WEATHER FORECASTING
How's the weather?—ocean-based automatic weather station will tell ... 587

WEBB, P.
Ventilated clothing as a protection against heat exposure (A) ... 558

WEBBER, GEORGE ROSS
Obituary ... 989

WEBER, C. E.
Powder metallurgy—its role in the design of nuclear-power reactors (D) ... 182

WEBER, H. E.
Boundary layer inside a conical surface due to swirl (A) ... 863

WEINBERG, H. N.
Professional acceptance through public recognition ... 298

WEINER, H.
Viscosity of steam, heavy-water vapor, and argon at atmospheric pressure up to high temperatures (A) ... 275

WEINER, JEROME
Elastoplastic thermal-stress analysis of a free plate (A) ... 866

WEINSTEIN, A. S.
Momentum diffusion from a slot jet into a moving secondary (A) ... 176

WELDING AND CUTTING
AWS welding show in Buffalo, 1956 ... 199
Butt welding austenitic stainless steel to ferritic steel in cylindrical shapes (A). 859
Consumable-insert technique for pipe welding ... 145, (D) 661
Duplex flame-cutting machine (A) ... 366

WELDING AND CUTTING (*continued*)
Experimental study of the temperature distribution in plates during arc welding (A) ... 177
Failure of a welded drying drum by caustic embrittlement ... 1105
Investigating the strength of copper-brazed joints ... 630
Maintenance welding high-test line pipe (A) ... 1159
Special brazing furnaces (A) ... 359
Time-temperature effect on properties of weld heat-affected zone in type-347 stainless steel (A) ... 860
Welded highway bridges (A) ... 846

WELL-DIGGING
Portable earth augers (A) ... 552

WELL LOGGING *See* PETROLEUM-WELL EQUIPMENT

WHITLOCK, ELLIOTT HOWLAND
Obituary ... 989

WHITTEN, D. C.
Corrugated metal diaphragm performance (A) ... 373

WICKERSHAM, P. D.
Computers and production engineering. 1062

WIER, F. C.
More movement—less investment—more profit (A) ... 462

WILCOX, JOSEPH S., JR.
Obituary ... 306

WILCOX, W. W.
Problems encountered in the translation of compressor performance from one gas to another (A) ... 1057

WILCOXSON, L. S.
Ash deposits on boiler surfaces from burning Central Illinois coal (A) ... 464

WILDHACK, W. A.
Investigation of the properties of corrugated diaphragms (A) ... 374

WILKINSON, FORD L., JR.
Biography ... 902
Elected Fellow of ASME ... 902

WILLE, RUDOLF L.
Cooling of glass molds (A) ... 178

WILLIAMS, P. C.
Sintering test—an index to ash-fouling tendency (A) ... 463

WILLIAMS, T. J.
Pulsation errors in manometer gages (A) ... 374

WILLIAMSON, G. V.
Maintenance control in steam power plants (A) ... 265

WILLIS, J. M.
Properties and applications of Coral rubber—a cis-1, 4 polyisoprene ... 1098

WILSON, ALEXANDER HARDIE
Obituary ... 306

WILSON, W. A.
Analytic procedure for optimizing the selection of power-plant components (A) ... 960

WIND TUNNELS
PIB aeronautical scientists study flight at 10,000 mph ... 199
Propulsion wind tunnel at NACA Lewis Laboratory ... 1007
Unitary plan wind tunnel (A) ... 734

WINGERT, W. L.
Design of a large coal-fired steam generator for 200 F exit-gas temperature and operating experience with pilot plant (A) ... 266

WINNE, D. H.
Report of the investigation of two generator-rotor fractures (A) ... 48

WINSLOW, A. C., JR.
System of charging for steam in industrial plants with power generation (A) ... 375

WISLICENUS, G. F.
Critical considerations on cavitation limits of centrifugal and axial-flow pumps (A) ... 458

WOHLENBERG, WALTER JACOB
Obituary ... 1202

WOLFF, JOHN FRANCK, JR.
Obituary ... 1094

WOLKO, H. S.
Optimum stresses of structural elements at elevated temperatures (A) ... 561

WOLLERING, W. R.
Design of manifold fittings for special temperature and pressure conditions (A) ... 1158

WOOD, JOHN MORGAN
Obituary ... 502

WOOD CONSTRUCTION
Glued-laminated timber construction (A) ... 651
Lateral tests on full-scale lumber and plywood-sheathed roof diaphragms (A) ... 652

WOOD INDUSTRIES. *See also* SAWDUST
High-pressure pneumatic conveying in the lumber industry ... 722
How RF concerns the wood industry (A) 652
Manufacturing synthetic lumber in Germany ... 310, (D) 868

WOOD WASTE
Wood-refuse spreader-stoker firing of two steam generators (A) ... 652

WOODS, BALDWIN MUNGER
Obituary ... 1202

WOOLF, J. R.
Influence of through-metal on heat transfer through aircraft-structural-sandwich panels (A) ... 1052
Mean temperature difference in one, two, and three-pass crossflow heat-exchangers (A) ... 460

WORK-HARDENING. *See* STRESSES AND STRAINS

WORLD POWER CONFERENCE
Fifth world power conference ... 850
To be held in Vienna, Austria, 1956 ... 480
Vienna Conference on "World Energy Resources" ... 387

WOSAK, ROBERT
Obituary ... 502

WYATT, HARRY M., JR.
Pulsation absorbers—their design and application (A) ... 1161

WYER, SAMUEL S.
Obituary ... 306

Y

YARNS. *See* TEXTILES

YELLOTT, JOHN I.
Flow characteristics of aerated crushed coal (A) ... 272
Power from solar energy—some fundamental factors (A) ... 1150

YERK, HENRY HERMAN
Obituary ... 406

Z

ZICKEL, JOHN
Pretwisted beams and columns (A) ... 175

ZILM, F. W.
Maintenance welding high-test line pipe (A) ... 1159

ZIMMERLI, F. P.
Spring materials (D) ... 870

ZIRCONIUM
Zirconium plant (A) ... 731

ZUCROW, MAURICE J.
Biography ... 1192
Elected Fellow of ASME ... 1192

ZYTEL. *See* PLASTICS